A COMPARATIVE STUDY OF CERTAIN PERSONALITY FACTORS, GENERAL INTELLIGENCE, PROFESSIONAL ATTITUDE, SOCIO-ECONOMIC AND ACADEMIC BACKGROUNDS OF TEACHER TRAINEES UNDER FACE-TO-FACE AND DISTANCE EDUCATION MODE

THESIS

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IN

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By

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UNDER THE SUPERVISION OF

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Certificate

This is to certify that the thesis entitled "***A comparative study of certain personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds of teacher trainees under face-to-face and distance education mode***" has been completed under my supervision by **Ms. Ritu Sharma**. The work is original and independently pursued by the candidate.

Therefore, I permit the candidate to submit the thesis for the award of the degree of Doctor of Philosophy in Education of the Aligarh Muslim University, Aligarh.

Dr. C. P. S. Chauhan
(Supervisor)

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LIST OF ABBREVIATIONS

16 PF	Sixteen Personality Factor
AIU	Association of Indian Universities
ANOVA	Analysis of Variance
B.Ed	Bachelor of Education
CABE	Central Advisory Board of Education
CCI	Correspondence Course Institutes
DDE	Directorates of Distance Education
DE	Distance Education
DEC	Distance Education Council
GER	Gross Enrollment Ratio
HO	Hypothesis
ICT	Information and Communication Technology
IGNOU	Indira Gandhi National Open University
IQ	Intelligence Quotient
M.Ed	Master of Education
NCERT	National Council of Educational Research and Training
NIEPA	National Institute of Education Planning and Administration
NPE	National Policy on Education
NUEA	National University Extension Association
NUEPA	National University of Education Planning and Administration
ODE	Open and Distance Education
OU	Open University
PCP	Personal Contact Programmes
PDS	Personal Data Sheet
PUC	Pre University Course
SCHE	State Councils of Higher Education
SD	Standard Deviation
SES	Socio-Economic Status
SPM	Standard Progressive Matrices
SPSS	Statistical Package in Social Sciences
TAS	Teacher Attitude Scale
UGC	University Grants Commission

UNISWA	University of Swaziland
UP	Uttar Pradesh
UPRTOU	Uttar Pradesh Rajarishi Tondon Open University

Chapter 1

THEORETICAL BACKGROUND

"Higher education provides people with an opportunity to reflect on the critical, social, economic, cultural, moral and spiritual issues facing humanity. It contributes to national development through dissemination of specialized knowledge and skill. It is, therefore, a crucial factor for survival. Being at the apex of the educational pyramid it has also a key role in producing competent personnel for the various important vocations. Higher education trains people for a wide variety of increasingly sophisticated and ever changing capabilities needed in the industry, agriculture, administration and services. Quality and efficiency of higher education has an impact on the rest of the system."

Vijayalakshmi Pandit (1974)

1.1 HIGHER EDUCATION IN INDIA: AN OVERVEIW

Higher education is rooted in the India's history and culture. Its growth depends upon the changing socio economic environment of the country. India is a vast country spread over about 329 million hectares of land area which is about 2.4 percent of the total land of the world. Within her limited resources, she provides shelter to about 1.2 billion human beings which constitute about 17.5 percent of the total population of the world. India has faced a lot of problems in socio-economic and educational development. Inspite of several constrains, India has witnessed a rapid growth of institutions of higher education especially during the last six decades since independence. The level of higher education development is determined by the size of institutional capacity of higher education system in the country. The size of higher education system in turn, is determined mainly by three indicators, namely, number of educational institutions, number of teachers and number of students enrolled. The higher education in India has witnessed many-fold development in its institutional capacity since independence. During the period from 1950 to 2011, the number of universities has increased from 27 to about 600, colleges from 695 to 32,000 and teachers from 21,000 to more than 650 thousand. Subsequently, the enrolment of students has increased from only 174 thousand in 1950-51 to about 17 million at

present. Some of the universities and other higher education institutions are among the best in the world.

The purpose of the above analysis is to bring to light the complexities and dilemmas of the development of higher education in India. Historically, the development of higher education in India can be discussed in three phases:

(a) Pre-British period

(b) British period

(c) Post-British period

PRE-BRITISH PERIOD

Even before the establishment of universities in Europe, India had a long history of higher education. There had been a tradition of enlightenment and scholarship in various fields since ancient times. Infact, the very idea of a modern residential university is a replica of ancient Indian forest Ashrams where Rishis (teachers) and their disciples assembled to lead a life of contemplation and philosophical discourse. The older universities of Europe came into existence much later during the medieval period. Even during Vedic- Upanishadic period, India had enlightened the world through famous seats of higher learning. Takshashilla and Nalanda were famous Indian Universities during ancient times. It is on record (*University Education Commission, 1948-49*) that the University of Takshashilla flourished up to the end of fifth century AD and that of Nalanda survived up to the 12th century AD. The purpose of education in these institutions was not utilitarian: rather, learners acquired knowledge for its own sake. The teachers maintained themselves on "guru dakshina" received in the form of presents from the students, and there was no formal arrangement for payment of salaries. No fee was charged in the ancient Indian system of education, but at a later stage, during the Buddhist period, Takshashilla and Nalanda Universities started charging some fees from rich students for maintaining the institution. The greatest motivation for the teachers was the respect and status in the society, which they enjoyed. Higher education was, however, not accessible to all and was available only to the upper and ruling classes of the society. Education was mainly a territory of Brahmins (the highest caste) who were responsible for teaching and learning, and constituted the uppermost section in the caste hierarchy.

The foreign invaders destroyed these great seats of learning during the medieval period, which was a period of conquest, destruction and loot. However, Mohammad Ghauri, who was a Muslim ruler started a "madarsah" at Ajmer and encouraged higher education (*Chauhan, 1990*). Some more schools and colleges were set up by other Muslim rulers at Lahore, Delhi, Rampur, Lucknow, Allahabad, Ajmer and Agra. But, the overall development of higher education was limited and accessible only to sons of feudal lords, merchants and ruling elite.

BRITISH PERIOD

The British East India Company, which came to India in 1600 AD, hardly paid any attention to the education of Indians for more than two centuries. It was in 1813 that the British Parliament directed the company for the first time "to accept the responsibility of the education of Indians and to spend not less than Rs.1,00,000 a year for this purpose." This provision was made in Article 43 of the Charter Act 1813, which can be cited as an important historical event in the history of development of western education in India (*Chauhan, 1990*). For about four decades to follow, the progress of education in India was very slow partly because of the indifference of the British Government, and partly because of the reluctance of Indians to accept western education system. On the recommendation of *Wood's Education Despatch* (*1854*), the first three modern universities were established at Calcutta, Bombay and Madras in 1857. The function of these universities was to conduct examinations and award degrees and the teaching work was done in the approved and affiliated colleges. With the rapid rise in enrollment after the establishment of these three universities, the University of Punjab at Lahore (1882) and the University of Allahabad (1887), were also established in the last quarter of 19th century. By 1902, there were 5 Universities and 191 affiliated colleges with a total enrolment of 17,650 students (*Anand, 1979*).

The recommendations of Indian Universities Commission (1902), appointed by *Lord Curzon* as Viceroy, resulted in the Universities Act of 1904, under which it was resolved that universities should also be teaching universities, and that stringent rules should be framed for affiliation and disaffiliation of colleges. This led to a rapid rise in the student enrollment during the next decade. The Calcutta University was the first to set up its own teaching departments under the leadership of Sir Ashutosh Mukherjee, following the Universities Act of 1904. In 1917, the Calcutta University

had 58 affiliated colleges and 26,000 students out of 58,000 for the whole of India - a large number compared to the literate population (*Hartog, 1939*). In the meantime, the National Freedom Movement gathered momentum and some enlightened Indians took keen interest in education. Consequently, six new universities came into existence between 1913 and 1921. These included Banaras Hindu University (1916), Patna University (1917) split from Calcutta University, Osmania University (1918), Lucknow University split from Allahabad University (1920) and Aligarh Muslim University (1920), which were established by acts of Central Legislature. During the period of Non- Cooperation Movement, Gandhiji founded Gujarat Vidyapeeth, Kashi Vidyapeeth, Tilak Maharashtra Vidyapeeth, Bihar Vidyapeeth and Jamia Milia Islamia to provide strength to the National Freedom Movement. However, during 1929-47, the official effort to develop higher education was slow due to some political problems related to freedom struggle and breaking out of the Second World War in 1939. Thus, the total number of universities set up by 1947-48 was 20 with about 500 affiliated colleges and 215 thousand of students.

POST-INDEPENDENCE PERIOD

As India achieved freedom in 1947, the Department of Education created in 1945 in the Government was converted into full-fledged Ministry of Education. Higher education was the first sector of education to attract the attention of the Union Government. As a first step, the University Education Commission (1948-49) was appointed, which recommended rapid expansion of higher education in India on a priority basis. During a period of three years from 1947 to 1950, 7 new universities were created raising the total number to 27. The number of affiliated colleges also increased rapidly to a total number of 695 in 1950-51. The total enrollment in higher education was 174,000 (excluding those enrolled in PUC). The total number of teachers working in these institutions was a little more than 21000. After 1950-51, the growth of higher education has been phenomenal.

In post-independence India, growth of higher education occurred in two distinct phases. In phase 1, from 1947 to 1980 there was steady growth. Large number of colleges were opened and affiliated to the new and the existing universities. The government set up universities and colleges at places not having higher education facilities. Courses in new and under-represented subject areas were started. This

resulted in geographical dispersal of higher education facilities and broadened its base. The trend of development of higher education during the post-independence period has been presented in the table below:

Table 1.1: Development of Higher Education in India (1951-2010)

Year	Universities (Numbers)	Colleges (Numbers)	Enrollment (In Lakh)	Teachers (In Thousands)
1950-51	27	695	1.74	21.3
1960-61	33	1,025	2.95	33.2
1970-71	100	3,604	19.54	128.8
1980-81	144	4,722	27.92	193.3
1990-91	184	6,627	49.25	272.7
1996-97	228	8,529	67.55	321
2003-04	320	16,885	99.5	457
2005-06	355	18,064	110.28	488
2007-08	431	20,677	116.12	505
2009-10*	570	32,000	150.00	650

Source:

1. Chauhan, C.P.S, "Modern Indian Education – Policies Progress and Problems'', Kanishka Publishers, New Delhi, 2007
2. Agarwal, Pawan, "Indian Higher Education – Envisioning the Future'', Sage Publications, 2009
3. Eleventh Five Year Plan, Planning Commission, Govt. of India 2007-12

* Figures are estimated

Indian higher education system has undergone massive expansion in post-independent India with a national resolve to establish more and more Universities, Technical Institutes, Research Institutes and Professional/ Non-Professional colleges all over the country to generate and disseminate knowledge coupled with the noble intention of providing easy access to higher education to the common Indians. This is evident from the fact that the first commission appointed by the government of free India in 1948 was on higher education. This was called the University Education Commission and was headed by Dr. S. Radhakrishnan. On the recommendations of the University Education Commission (1948-49), the Government of India reviewed the University Grants Committee constituted in 1945 and set up the *University Grants Commission* (*UGC*) in 1953, which became a statutory body in 1956 by an Act of Parliament. Similar other bodies for regulating development of higher education in various areas and maintaining good quality were also set up.

The next 15 years witnessed a steady growth of higher education institutions along with corresponding growth of enrollment. But, the development was mainly quantitative and ignored qualitative aspects. *Education Commission* (*1964-66*) highlighted the role of higher education in the development of Indian society and expressed a grave concern over the deteriorating quality of higher education. Some important recommendations of the Commission were:

(i) Introduction of the policy of selective admissions in colleges and universities on the basis of merit;

(ii) Use of regional language as media of instruction at the university stage;

(iii) Adoption of 10+2+3 pattern of school and college education;

(iv) Establishment of major universities;

(v) Establishment of autonomous colleges;

The *National Policy on Education* (*1968*), which was based on the recommendations of Education Commission (1964-66), made proposals for higher education related to number of students in a college, establishment of new universities and improvement of standards of teaching and research etc. In the words of *Naik* (*1982*), the post –independence period may be described literally as the ***"Era of Higher Education"*** in Indian educational history. For about 15 years from 1950-51 to 1965-66, the policy of open door admissions had created many problems. However,

the quantitative expansion of higher education was faster during the next 20 years till 1985-86.

The *National Policy on Education (1986)* also made important proposals for the quantitative and qualitative development of higher education in India. The NPE-1986 as revised in 1992 proposed:

(i) To lay more emphasis on consolidation and expansion of the facilities of the existing institutions;

(ii) To develop autonomous colleges in large numbers;

(iii) To redesign courses and programs to meet the demands of specialization;

(iv) To develop planning and coordination mechanism at state levels through State Councils of Higher Education (SCHE), which would function in close association with the UGC;

(v) To provide for minimum essential facilities and regulate admissions according to capacity;

(vi) To introduce in-service teacher orientation and continuing refresher programmes in order to improve the quality of teaching;

(vii) To provide enhanced support to research , to establish autonomous commission to foster and improve teaching and research;

(viii) To strengthen Indira Gandhi National Open University (IGNOU) established in 1985 to democratize education through flexibility and innovative programmes of open learning system and to support establishment of Open Universities in the states.

After the proposals of National Policy on Education (1986-92), the expansion of higher education has been at a faster rate than it was during the earlier period. Special emphasis was laid on setting up quality education institutions in vocational and technical fields. According to the latest available published data (Table 1.1), the higher education system in India is one of the largest in the world. The overall growth rate of the system at present is of the order of 5-7% per annum.

1.2 DEMAND- SUPPLY MISMATCH

The Indian higher education has expanded manifold over the past six decades. Massive expansion has obviously enhanced access to higher education. In spite of

large growth, India's Gross Enrollment Ratio (GER) compares quite poorly with the advanced nations and many developed countries as well. While higher education system is large quantitatively, it still is too small to meet our needs. The GER is only 15% compared to the World average of 23 percent.

The expansion of higher education until recently occurred as a result of 'unplanned proliferation of institutions of higher learning.' After independence, the Government of India adopted the strategy of planned development in all sectors of economy including education. The First Five Year Plan began on 1st April 1951 and ended on 31st March 1956. So far, Ten Five Year Plans have passed and Eleventh Plan is going on. The main focus has been on consolidation and expansion of facilities in the existing institutions. Neither the National Policy on Education, 1986 nor the successive plans provided any explicit targets for enrollments. In the *Sixth Plan* (*1980-85*), low priority was given to the expansion of educational facilities by way of new universities, centres for post graduate studies, new departments and construction of buildings. In the *Seventh Plan* (*1985-90*), there was focus on making optimum use of the existing facilities in the universities, especially physical facilities. In the *Eighth Plan* (*1992-97*), emphasis continued on strengthening existing institutions, with a provision to support new departments and courses in developing universities.

The *Ninth Plan* (*1997-2002*), paid attention to higher education institutions in backward areas, hilly areas and border areas to remove regional imbalances. There was also a thrust towards addressing the higher education needs of underrepresented social groups, namely SC/ST candidates, women, disabled and minority candidates. This thrust continued in the *Tenth Plan* (*2002-07*) as well. Thus, the issue of access in the ninth and tenth plan was on equity in access. Adequate resources were not provided. New universities and colleges and departments were established to accommodate the underrepresented classes and communities in reckless manner, without due consideration to the resources available for their successful functioning. It is for the first time that the *Eleventh plan* (*2007-12*) mentions the explicit targets for enrollment in higher education and public funding for higher education has also been increased significantly. The Eleventh Plan stated- ***"Our long term goal is to set India as a nation in which all those who aspire good quality higher education can access it, irrespective of their paying capacity"***. The Eleventh Plan recognized the dual problem of higher education, namely low enrollment rate and the regional imbalance.

It recognized that the 12% enrolment rate was too low compared to 36.5% for countries in transition and more than 55% for developed countries. With this realization the Eleventh Plan aims to increase the GER to 21% by the end of *Twelfth Plan* (*2012-2017*) with an interim target of 15% by 2012 (*Thorat, 2009*). Of course, by 2012, the target of 15% GER has been achieved.

Despite the expansion that has occurred, it is evident that the system is under stress to provide a sufficient volume of skilled manpower, which is equipped with required knowledge and technical skills to cater to the demands of the economy. The accelerated growth of our economy has already created shortages of high quality technical man power. Unlike the developed countries, where the young working age population is fast shrinking with higher dependency ratios, India has a demographic advantage with about 70% of the population below the age of 35 years. But this advantage can only be realized if we expand opportunities for our youth on the massive scale and in diverse fields of basic science, engineering & technology etc. this is possible only if we initiate rapid expansion along with long overdue reforms in the higher, technical and professional education sectors.

An important aspect of higher education is that there has been quantitative expansion of colleges and universities and also expansion of number of students enrolled year by year. There has also been a mushroom growth of institutes of higher learning, which charge higher fees; even in them there is tremendous rush but the demand on higher education is not met fully. Inspite of so much expansion of higher education many students are deprived of admission to the formal system of higher education. "***The proportion is even more adverse in some regions, particularly for women, SCs and STs. Rural areas have been touched only marginally by higher education of quality***" – **Challenge of Education, 1985**. The formal system of higher education is not within the reach of the larger sections of the people. It fails to meet their requirements in full. There could be several reasons like limited seats, geographic and social isolation of the students, students not able to fulfill the requirements for entry into the formal set up etc. The minuscule population, that has appropriated to itself the bulk of available educational facilities at the higher education stage, is not always of facilities at the higher education stage, is not always of the requisite intellectual caliber.

However, institutions of higher education in the country today do not inspire much confidence. As the *Kothari Commission Report* states the principal objective of universities is "***To deepen men's understanding of the universe and of himself in body, mind and spirit, to disseminate this understanding throughout society and apply it in the service of mankind***". The system of education as currently practiced in India does not appear well suited to achieve this high objective in the India contest. In the words of ***Yogeshwar Sharma (1994)***, "***The Indian higher education system is characterized by huge and largely unplanned expansion without responding much to the changing needs of the society and the market demand***". When education was restricted to the elite, the school and college population were homogeneous in nature and providing suitable education was a comparatively easy job. With education through open to everyone, the student population is more heterogeneous and so requires a more diversified curriculum and facilities. Further, on the one hand the institutes of higher education suffer from lack of adequate infrastructure and on the other hand their internal management and efficiency leave much to be desired.

Higher education in India is also facing major issues like fall in quality, increase in quantity and not able to maintain equality. Further, since independence, Indian universities have become increasingly dependent on the financial support from the government. Now, the state governments are experiencing several financial constraints. At the same time, there is a lot of pressure on them to increase expenditure on school education. Thus, it is clear that it is not possible for the formal system alone to provide higher education for all.

During, the last five decades, there have been two important developments, which have caused concern not only among the policy planners, decision makers, and educationists but also other enlightened citizens.

First, there has been tremendous growth in the human population in the world. It took more than a million years for the human population, since its origin on the globe, to touch one billion mark by 1800. Second billion was added within a smaller period of 120 years up to 1920. The addition of third billion took only 40 years (1920-1960), and the next 2 billions were added within a still smaller period of 27 years from 1960 to 1987. It is estimated that world population has reached to 6.94 billion in July, 2011 (*United States Census Bureau*). Proportionately, the population of India, which was only about 360 million in 1951, crossed one billion mark by 2001 and

reached to 1.21 billion in March, 2011 (*Census of India Organisation*). But the formal system of education that we have created caters to the requirements of comparatively less number. Therefore, a large number of persons are still out of the ambit of the formal education system, which is second largest in the world. This shows that our formal institutionalized system of education is being increasingly rendered inadequate to cater to the requirement of the teeming millions. At the same time, due to our democratic system of polity and increasing socio-political awareness among the disadvantaged sections of the society, the demand for education has tremendously increased.

Second, during the later half of the 20th century, the rate of growth of knowledge in all fields has been very high. This has been particularly so during the last two decades. It is said that knowledge doubles within every 3 or 4 years. Consequently, every citizen needs to update his knowledge and skills to cope with the changing social, vocational and professional circumstances. Now, we have more people to educate and more knowledge to be imparted than we had during 1950s. The situation became more paradoxical when the system of higher education, which was already inadequate, felt daunting pressure of enrolment due to expansion of school education and lack of employment opportunities after secondary education. In order to cope with the situation, the government of India resorted to the expansion of higher education during 1950s and 1960s mainly in terms of establishment of colleges of general education. During this period, expansion of higher education took place at an average rate of over 10% per annum. The graduate who passed out of these colleges found themselves unable to get gainful employment for want of practical knowledge. Moreover, unplanned expansion of higher education led to the problem of maintenance of standards, which required more funds to sustain it, thus exerting unbearable pressure on the public exchequer.

As a result of unplanned expansion and scarcity of funds, the quality of education imparted in the institutions of higher education successively deteriorated. The lopsided and unbalanced expansion of education diverted the efforts and resources of the government towards mass education through higher educatioo to elite education at the cost of vocational training. This process produced an enormous number of unskilled and unemployable graduates with devalued degrees. This also led to the deterioration in the quality of education due to overcrowding of the educational

institutions, curriculum constraints and lack of time. As a result there is a wide gap between what is needed by the society and what is produced by education system.

1.3 NEED FOR ALTERNATIVES

Although, the quantitative development of higher education, during the post-independence period, has been apparently very impressive, yet, it is inadequate to meet the growing demand of the people for higher education. Now, unlike the pre-independence period, the benefits of higher education are reaped by a sizable number of youth even from underprivileged sections of the society. But, still there is tremendous pressure on the system and demand is still unmet.

The first and foremost task that India should undertake is to expand higher education system further in a planned way so as to cover as large a portion of the eligible age group (18-24 years) as possible. To meet the challenges of increasing number of aspirants for higher education, action has to be taken on many fronts and levels. Under these circumstances, it has become necessary to identify a suitable mode of education, which would meet out the demand and fulfill the educational requirements. Therefore, non-formal and distance education have become the crux of the national education policy today. Throughout the world higher education is undergoing a paradigm shift from an instructional college to a learner-centered integrated network model, which is based on access to learning resources and a student initiative. Moreover, the existing model of higher education requiring selective learning over a specified period is being replaced by a model of lifetime learning for all. This has become necessary because of the changing nature of jobs which now require continuous renewal and updating of knowledge and skills. Therefore, India must expand open and distance learning approach in a big way.

The need for a national Open University in India was justified by Sh. G. Parthasarthi, the then Vice Chancellor of Jawaharlal Nehru University, New Delhi, in the following words (*Patanjali, 2005*):

"*In a situation of the type, where the expansion of enrolment in higher education is to continue at the terrific pace and where available resources in terms of men and money are limited, one obvious solution, if proper standards are to be maintained and the demand for higher education for different sections of people is to be met, is to adopt the open university system with its provision of higher education*

on a part time or our time basis. The group, therefore, recommends that government of India establish as early as possible on Open University by an act of Parliament. The university should have jurisdiction over the entire country so that when it is fully developed, any student, even in the remotest corner of the country can have access to its instruction".

During the last five decades since Independence, India has made tremendous progress in the field of education, though mostly qualitative in nature. Earlier, education was available only to elite classes of the society, and the large majority of the poor and marginalized people remained deprived of it. The democratic and socialist values enshrined in the Constitution of free India brought a ray of hope for the common masses, especially, to the underprivileged and disadvantaged sections of the society including women, scheduled castes, scheduled tribes and religious and linguistic minorities. Equalization of education and employment opportunities has been the cherished goal behind all efforts of the government aimed at bringing about social and economic reforms. In order to achieve the goal of providing free and compulsory elementary education to all children of the age group 6-14, existing system was adopted without much required structural transformations and was subjected to a large scale expansion. Due to rising social demand for education after Independence, the expansion of elementary secondary education has been phenomenal resulting in a tremendous presence of student seeking admission to institutions of higher education. The main emphasis has been an establishment of new schools and enrolment of students at all stages of education. As the school education expanded, the number of students going for higher education also increased. In an attempt to accommodate the growing number of aspirants the system of higher education has to be expanded.

The state governments experience tremendous pressure from the public to establish more and more colleges and universities. These considerations have led to fast expansion of higher education in our country, which in turn, has adverse impact upon its quality. *The Education Commission (1964-66) had rightly stated that, "In a world based on science and technology, it was education that determined the level of prosperity, welfare and security of the people. On the quality and number of persons coming out of our schools and colleges would depend on our success in the great enterprise of national reconstruction the principal objective of which was to raise the*

standard of living of our people" (*Chauhan, 2004*). But quality education imparted through the conventional system is costly and beyond the reach of poor people who aspire it. According to a crude estimate reported by *Perry*, the cost per student in the UK Open University in 1973 was £2749 against a figure of £5250 per student in the comparable faculties of the conventional universities. Moreover, it is not possible to expand the formal system beyond a limit due to financial constraints. If we try to expand it without making adequate financial support available its quality will be poor. The problem has become more serious since the government has decided to reduce subsidy on higher education after the fourth five-year plan. Therefore, in order to ensure access and education of a reasonably good quality to all willing learners, we must think of some alternative system capable of supplementing the role of conventional system, and ***Distance Education* (*DE*)** is one of such alternatives. In the beginning, distance education was viewed as an anomaly on the traditional campus education which has now become an accepted alternative system of education. Distance education as a system de-emphasis teaching but encourages learning to make a learner truly autonomous.

In this regard, *Michel Moore* (*1971*) states that distance education is "the family of instructional methods in which the teaching behaviors, including those that in continuous situation would be performed in learner's premises, so that communication between teacher and the learner must be facilitated by print, electronics, mechanical or other means" (*Verma, 2008*). *Trivedi* (*2005*) focused on the quality aspect of the B.Ed programme offered by DE mode of Indira Gandhi National Open University (IGNOU) and self financed conventional mode in the state of Gujarat. The questionnaire was developed to know the attitudes of students regarding both the systems. The questionnaire was admininstered on 150 learners of each system. The study came up with important findings- Both the systems are in demand for B.Ed programme due to its job oriented nature. DE mode has flexible nature and allows the learner to serve during their studies. Study material of IGNOU has been appreciated by more than 50% learners. Through distance education, we can provide a large number of learners an improved quality of training by introducing a variety of relevant courses.

1.4 DISTANCE EDUCATION- CONCEPT AND HISTORY

It is a well known fact that campus-based higher education is a big strain on the public exchequers. Especially, in the developing countries, higher education sets a lion's share of the total allocation of educational budgets at the cost of elementary education. Increasing demands for higher and continuing education brings further pressures on the budgetary provisions. DE with its low cost of instruction is more popular than the costly conventional system of education.

DE implies education being imparted to a student by the teacher despite physical distance. A more or less generally accepted definition of distance education is proposed by *Holmberg* (*1990*), "The term distance education covers the various forms of teaching and learning at all levels which are not under the continuous, immediate supervision of tutors present with their students in lecture rooms or on the same premises but which nevertheless benefit from the planning, guidance and tuition (i.e. tutoring, teaching) of the staff of a tutorial organization. Its main characteristic is that it relies on noncontiguous, i.e. mediated, communication. Distance study denotes the activity of the students, distance teaching that of the tutorial organization" (*International Encyclopedia of Education*). Distance education is an alternative system capable of supplementing the role of conventional system.

A statement by Prof. G.Ram Reddy (1988) as quoted by *Chauhan(2004)* is relevant to be quoted here:

"There is a case of Ekalavya mythology who wanted to learn under the Guru, Dronacharya, who as we all know, refused to take him as a student because he was neither a Brahmin nor a Kshatriya. However, Ekalavya was determined to learn and what happened subsequently is known to all of us. (The legend goes that Ekalavya built a figure in the image of Dronacharya and started practicing archery under its feet. Subsequently, his skills in archery surpassed those of the best pupil of Dronacharya. What happened subsequently is not relevant here. The point, however, that needs to be made is that today a motivated learner cannot be and must not be ignored for any reason whatsoever). In those days as Dronacharya could refuse to take Ekalavya as a student and the society would tolerate it. Today's democratic society cannot afford to overlook the interest of Ekalavyas nor can Dronacharya say "no" to them. Distance education and the open universities facilitate him".

Open Universities are the universities for the modern Ekalavyas. Availability of communication technologies make this possible today. It is said that there was a time when, if a student wanted to learn, he had to go the Aristotle. Today we have the means to take Aristotle to the student. DE characterizes a method of education which does not rely on physical contact between teacher and taught. Instead it brings knowledge or training to the students without dislocation of either his domestic arrangements or employments. It does this by means of multimedia teaching packages based on correspondence texts and audio-visual material, with only a minimal reliance on face-to-face teaching. A student may study where and when he wishes, provided that he is pacing himself sensibly and passing such assessments tests as are set. He is thus freed from the constraints of the classroom and a fixed daily schedule, and the institution teaching him from the salary and other implications of a conventional tutor-student ratio.

With the advent of the information age, distance delivered education has grown exponentially in a short duration and will continue to grow in the foreseeable future. The use of distance education is seen as one method of improving the cost efficiency of the educational system. It also allows a greater clarity in allocation of roles and responsibilities- particularly for funding than more traditional existing structures. The use of new technology within distance education is also seen as acting as a catalyst towards a wider acceptance of new technology in society.

In brief, many trends in higher education are influencing the future of distance learning e.g. students' enrollment are growing to surpass the capacity of traditional infrastructure, learner profiles are changing, and students are searching for education that meets their needs. On the other hand, traditional faculty roles, motivation and training needs are shifting while workload and instructional issues continue to deter the faculty from participation in distance education. The institutional and organizational structure of higher education is changing to emphasize academic accountability, competency outcomes, outsourcing content, standardizing and adaptation to learner demands. The internet and other information technology devices are becoming more ubiquitous while technological fluency is becoming a common expectation. Funding challenges are increasing and it is expected that with fewer resources, the increasing life-long learning demands would to be fulfilled.

The ultimate goal of distance education is to provide an alternative channel of education so that whoever has not been able to derive the benefit from the conventional system, may get his aspirations of educational development fulfilled through it. This goal can be achieved only if this system is delinked from the conventional system and is completely freed from all such pre-conditions of time and space. In other words, it should be made as open and flexible as possible. The emerging theory of education that one is neither to be forced for education nor debarred from it; one may have as much of it as one likes and can absorb, further makes a case for openness and flexibility. Conversely, if such conditions as entry qualifications for the various distance study programmes, ceiling the limit on enrollment of students, attendance in Personal Contact Programmes (PCP), are not dispensed away innumerable aspirants of education who suffer from one constraint or another would not be able to derive the benefit of even this system. But once it is released from all such pre-conditions, it would revolutionize the whole gamut of educational opportunities. People would no larger feel handicapped. They will have access to every type of educational and skill improvements whenever and wherever they may have like to have it. The conventional system cannot be democratized beyond a certain point, because of the inherent limitations in it. DE being free from those systematic constraints needs to be thrown open for all so that everyone, irrespective of one's age, sex, place of residence, occupation, education and the like may be able to derive benefit from it and thereby enhance his competitive capabilities or meet his aspirations. DE must therefore discharge the responsibilities that democracy and development has put on it.

The origin of distance education was of mid 19th century in the forms of Correspondence Courses, Home Study Programmes, Universities of the Air, Radio and Television University, Every Man's University, Free and Open University. The idea of distance education took a formal shape in 1840 when *Issac Pitman* conducted a postal/correspondence course in shorthand in Bath, England. It became more systematic in the UK in the last decade of 19th century. Some colleges - Foulks Wynch (1884), International Correspondence College (1894) etc introduced examination-oriented courses (*Sahu, 1993*) on commercial basis. Later on, the Robin's Report (1963) to the government of UK, emphasized the need of expanding universities so as to meet the demands of the qualified school leavers and pleaded for

extension of opportunities to all classes of the population as an emergent need in order to replace the 'elite' system of education that had been prevalent in UK for many years (*Anand, 1979*). The first open university was established in UK, through the Royal Charter 1969, on the basis of the Report of the Open University submitted to the Secretary of the State for Education and Science, which emphasized higher education as a basic right and condemned the denial of the greatest educational opportunity to the greatest number of citizens as unjust to the individual and unwise for the society. This university became the first full-fledged university in the field of distance education and is hailed as a land mark in the history of distance education.

In United States also, a humble beginning in the direction of setting up distance education centers was made in 1873, with the formation of the society for Home Studies (*Sahu, 1993*). This was followed by the setting up of correspondence institutions like Illinois Western University (1874) and Correspondence University at Ithaca, New York (1883). Subsequently, other institutions like the Institute of Correspondence Schools (1890), American Society for Extension of University Teaching (1890) and National University Extension Association (NUEA) made considerable headway in the sphere of distance education.

In the same way, the USSR also established Correspondence Study Department (1926) in one of the institutions of higher learning, and subsequently, encouraged correspondence education in order to cope with the demand for specialists with higher academic and professional qualifications. By 1961, the institutions of correspondence education had become an organic part of the entire educational system covering all stages of education, elementary, high school, undergraduate and postgraduate courses. Due to the conducive geographical conditions, Australia started Correspondence Teacher Education Programmes in the University of Queensland. Today most of the Australian Universities are providing instruction through distance education mode.

1.4.1 DEVELOPMENT OF DISTANCE EDUCATION IN INDIA

The Open Learning system in India originated in the form of 'Private Appearance' of the candidates in public examinations under which a candidate who could not study as a regular student was allowed to appear in the examination after undertaking necessary study at home. This system was probably introduced to help the poor and

needy, but motivated students to continue their studies further after studying as a regular student for some time.

Later on, in order to overcome the deficiencies of the private appearance and improve the quality of education, some universities started correspondence courses to cater to requirements of such students. The wide social acceptance of the concept of correspondence education led to the development of the concept of the distance education, which in turn, led to the direction of establishment of open universities.

Further, keeping in view the heavy pressures on the formal system of higher education, for the first time emphasis was laid on distance education in the form of correspondence courses in the third plan. In this context, the *Planning Commission of India (1960)* had pointed out, "*in addition to provision in the plan for expansion of facilities for higher education, proposals for evening colleges, correspondence courses and the award of external degrees are at present under consideration*". On the basis of observation made by the Planning Commission of India, the Central Advisory Board of Education (CABE) appointed an Expert Committee having 10 members to give suggestions regarding the correspondence courses.

The Committee had made the following suggestions with regard to the nature of courses, instructional process, course development, use of media, students fees:

- Correspondence courses should be confined to first university degree.
- There should be personal contact between the teacher and the taught. "Contact" classes being organized through a tutorial in preference to a lecture based mode.
- The Committee recommended that the courses be started only in the faculties of Arts and Commerce and later on in Science subjects.
- Correspondence courses should normally take a longer period than a degree at a regular college.
- Fees for students applying for these courses should be reasonably high in the first year but should be lower in the successive years.
- Two supplementary aids (a) refresher courses (b) use of radio and television are recommended in order to raise standards in spoken language and to correct a too easy reliance on the written word.

As per suggestions of the Expert Committee, the University of Delhi established its school of Correspondence Courses and Continuing Education in 1962.

With a view to maintenance of standards of full-time based higher studies and reducing the heavy influx into this system, the *Education Commission (1964-66)* had supported the idea of encouraging correspondence courses. *According to the Education Commission*, "one solution to this is to keep full-time seats strictly limited on the basis of resources available and to institute correspondence courses, part-time courses, evening courses etc. for those who aspire for a university degree but are not able to get admission to the regular courses." Of course, the Education Commission recommended the promotion of correspondence courses on the basis of other reasons like social responsiveness, economy of the system, and continuing nature of education. In its report, the Education Commission justified the relevance of correspondence courses as a method of taking education to all those who make a deliberate effort to study whether at home or at the place of work. Quoting the success of University of Delhi in running correspondence courses, it recommended the introduction of correspondence courses on a large scale.

The National Policy of Education (1968) highlighted the idea of introducing correspondence courses on a large scale at the university stage. The policy statement made it clear that, "education through part-time and correspondence courses should be given the same status as full-time education." Within the first decade of its introduction, the DE developed a wider base, offering different general and professional courses in as many as thirteen universities and four Regional Colleges of Education of the National Council of Educational Research and Training (NCERT). The courses covered different fields like Arts, Science, Commerce, Education and Agriculture at undergraduate level. The correspondence courses had reached the take-off stage during 1971 when six universities namely Cochin, Madurai Kamaraj, Himachal Pradesh, Punjab, Bombay & Jamia Milia Islamia started establishing institutes of correspondence courses in respective universities (*Sahoo, 1993*). As a whole, the universities offering correspondence courses by 1971 covered Northern, Southern and Western regions of the country, of course having major concentration in the northern region.

During 1972-81, correspondence courses were instituted in 19 more universities of the country. Establishment of correspondence course institutes in these universities gave wider representation to different regions of the country, except north eastern region, to have distance education programmes. Moreover, during this period

most of the universities already having correspondence courses expanded their courses to new fields at undergraduate and postgraduate levels. Two more institutions namely National Institute of Educational Planning and Administration (NIEPA), now National University of Educational Planning and Administration (NUEPA) and Association of Indian Universities (AIU) introduced several courses for educational administrators and teachers in 1979, respectively. Andhra Open University was the first Open University in India set up in 1982.

The new National Policy on Education, 1986 emphasised on the role of Open University and distance education in the process of democratization of education in the country. The programme of action of the new policy on education (1986) on this area reads as:

(i) The Open University augments opportunities for higher education, ensures access, is cost-effective and promotes a flexible and innovative system of education.

(ii) The IGNOU has been established with these objectives and came into existence in September, 1985. The University has been assigned the responsibility to coordinate the distance learning system in the country and determine its standards.

The Programme of Action of the NPE highlighted the use of DE in the process of encouraging in service teacher education programmes, continuing education and the training of management personnel of the educational system. Moreover, with a view to encourage media and technology in educational system, the programme of action insisted on:

- Establishment of radio stations in teaching universities/ colleges during the seventh plan;
- Provision of TV channel by 1991-92;
- Creation of dedicated satellite system for educational needs in the long run;
- Integration of computer education modules in professional and general education courses by 1995;

In May 1991, the Board of Management of IGNOU formulated the Statute for the establishment of the Distance Education Council (DEC) for promotion,

coordination and maintenance of standards in the Open University and Distance Education system. It has been given the functions such as identification of priority areas in which distance education programmes should be organized and providing necessary support for organizing them, identification of learner groups and the types and nature of programmes to be organized for them. It also has the responsibility of training of personnel for distance education, provision of financial support to open universities and distance education institutions for their development and taking up special projects.

In 1995, the CABE Committee on DE recommended establishment of an Open University in each state of India. It has also proposed the establishment of an Open University network with the major objective of sharing resources, minimizing duplication, ensuring uniform standards, promoting student mobility and developing efficient student support services. The network while promoting open university progrmmes on a large scale can also involve institutes of formal education in designing programmes and also participating in the network. Such participation can build bridges between conventional courses and distance education programmes leading to meaningful reorganization of the higher education system.

The Ministry of Human Resources Development of Government of India has drafted a New Policy of Distance Learning in Higher Education Sector in August, 2009 with a view to streamline distance learning and create space for the citizens to improve their human resource. It is a bold step in the right direction of streamlining the distance education in the country. The policy has unequivocally underlined the need for expansion of distance higher education in satisfying the increasing demand for higher education in the country. The key points of above policy in respect of distance learning are laid down (*Krishnan, 2010*):

(i) All universities and institutions offering programmes through the distance mode shall need to have prior recognition/approval for offering such programmes and accreditation from designated competent authority, mandatorily in respect of the programmes offered by them.

(ii) The universities / institutes shall have their own study centres for face to face counseling and removal of difficulties as also to seek other academic and administrative assistance. Franchising of distance

education by any university, institutions whether public or private shall not be allowed.

(iii) It would be mandatory for all universities and education institutions offering distance education to use Information and Communication Technology (ICT) in delivery of their programmes, management of the student and university affairs through a web portal

(iv) All universities/education institutions shall make optimal use of e-learning contents for delivery/offering their programmes through distance mode. They shall also be encouraged/required to adopt e-surveillance technology for conduct of clean, fair and transparent examinations.

(v) The focus of distance education shall be to provide opportunity of education to people at educationally disadvantaged situations such as living in remote and rural areas, adults with no or limited access to education of their choice etc.

(vi) Convergence of the face-to-face mode teaching departments of conventional universities with their DE directorates/correspondence course wings as also with Open Universities/institutions offering distance education shall be impressed upon to bridge the gap in distance and conventional face-to-face mode of education. India shall be allowed, subject to the fulfillment of the legal requirement of the country.

(vii) A National Information and Communication Technology infrastructure for networking of Open and Distance Education (ODE) institutions shall be created under National Mission on Education through ICT.

(viii) Efforts would be made to create favourable environment for research in ODE system by setting up infrastructure like e-libraries, digital data-base, online journals, holding regular workshops, seminars etc.

(ix) Training and orientation programmes for educators and administrators in ODE system with focus on use of ICT and self-learning practice, shall be encouraged.

(x) ODE institutions shall be encouraged to take care the educational needs of learners with disabilities and senior citizens.

1.4.2 FEATURES OF DISTANCE EDUCATION

DE has been perceived as a means of democratization of educational system. The salient features of distance education systems include academic accountability and excellence, rationalization of student support services with constant feedback for improvisation and help to the adult learners by taking higher education to the remote and distant areas and making it available to different strata of population particularly the lower stratum which does not otherwise have a channel for educational development. It provides more freedom and opportunity of access. It gives wider range of opportunities for learning and qualification by overcoming geographical and personal constraints, cultural and social barriers and lack of educational infrastructure. It is learner-centered approach which allows greater flexibility and choice content. Distance mode of education offers the combination of education with work and family life.

Characteristic features of distance education can be briefly described in accordance with Keegan's definition:

- **Separation of Teacher and Learner**

  The separation in space and time of teaching and learning functions is a basic characteristic of distance education. However, the separation is not always permanent, the nature and duration of teacher-student contact varies according to the policies of institutions. In DE the learner is basically separated from the physical presence of the teacher except for few occasions of contact in counseling and tutoring sessions, summer schools or personal contact sessions. This physical distance that separates the teacher from the student is the defining principle in DE.

- **Organized Efforts of an Educational Institution**

  Distance education is an offering of courses by an educational institution, which develops courses and consciously facilitates learning by the students at a distance. An educational institution plans, designs, develops and supports the courses and programmes.

- **Use of Technical Media**

  Distance education is basically dependent on the use of all the available and possible mechanical or electronic media – print, audio, video, teleconference, broadcast, computer etc. for educational communication. The educational communication in distance education takes the form of an integrated approach where a number of media are used to teach the student from distance.

- **Two-way Communication**

  Distance education is different from educational technology such as Radio, TV, etc. which are means for one-way communication. It recognizes the benefits of dialogue between the learner and the teacher, distance education emphasis two-way communication through telephone, teleconference, counseling sessions and assignments.

- **Separation from Learning Groups**

  In distance education, the learners are separated from each other and the possibility of learning group and cooperative peer learning is minimum. But it is possible to provide group learning opportunities in distance education as well through contact programmes. Due to the advent of computer technologies, it is possible to provide group learning opportunities through e-mail and computer mediated conferencing.

- **Industrialised Form of Education**

  The mass production and distribution of learning materials, the division of labour, the logical aspects of administering and coordinating the activities of large population of students and counselors and the layouts of operational units require the use of the principles and practices of an industry.

- **Learner Centered Education**

  DE is also attributed as learner-centered education, where the learner is the main focus of all teaching-learning transactions. The courses are prepared keeping in view the learners' needs and requirements. A learner-centered approach also requires the learner to be mature and

independent to take the responsibility of learning from a variety of learning experiences through different media.

1.4.3 CLIENTELE OF DISTANCE EDUCATION

Distance education can provide educational opportunities to different sections of the society, who are unable to pursue education because of their problems. In a democratic social order everyone must have proper education, therefore, distance education is seen as a popular and democratic appeal to the people who are unable to attend school, college and university campus on any account. A large majority of weaker section of our society i.e. scheduled caste, scheduled tribe, backward class, women and physically disabled etc. remain away from the functioning of our educational institutions and hence the concept of DE provides them the most wanted opportunity for getting education.

Developing countries, in general, suffer mainly from the ever increasing population and eventually number of students seeking admission to colleges and universities is increasing. DE has favourable economics of scale, and can easily impart education to large number of students.Tremendous imbalance in accessing educational opportunities persists in many of the developing countries. Most of the aspirants for higher education are unable to get into institutions due to geographical, financial, social and cultural handicaps. Distance teaching institutions provide the learners flexibility in deciding 'what to learn', 'when to learn' and 'where to learn'. Distance teaching universities can employ multimedia approach to provide training programmes for literacy workers who can go to illiterate persons to help them alleviate illiteracy. Literacy has intersectoral link with health care, family planning, agricultural production, life expectancy and ultimately with social development.

The DE institutions have popularized their educational programmes among the rural and disadvantaged people. It has developed programmes to suit the individual needs of the learners residing in rural areas, educationally backward and underdeveloped regions and for learners from the disadvantaged group belonging to economically weaker sections of the society. Moreover, in order to provide educational opportunities to the greater percentage of the people from the marginalized and disadvantaged groups, DE institutions have ensured the availability of learning materials, educational transactions in mother tongue/regional languages.

Chiyango (2010) carried out a collective case study to assess the various aspects of distance teacher education in five institutions of Zambia. The researcher collected data using semi-structure individual and focused group interviews and observations. In addition, relevant documents such as reports, policy documents and statistics were used. Also, the researcher analyzed study materials to establish whether they were suitable for distance students. The findings concerning the strengths of the management of distance teacher education in Zambia were: recognition by providers and clients of the importance of distance teacher education, an awareness of the challenges of distance teacher education and a positive attitude towards distance teacher education. The findings concerning the weaknesses were: inadequate student support services, inadequate channels of communication, inadequate training and professional development problems concerning assignments and examinations, inadequate records management and inadequacy regarding interactive materials.

Most of the developing countries are agricultural countries where 70% or more of the workforce is engaged in agriculture. Farmers in these countries still follow age old agricultural practices as they are unaware of the modern methods of agriculture. Distance teaching universities have launched various academic programmes for farmers for providing information on new farming methods.

Special education is the area where distance education has deliberately applied its media technology and other innovative methods of teaching for providing life skills, basic education and vocational training and higher education to the disabled.

Distance education can reach the unreached and in this way it is able to democratize educational facilities. It can be the best engine for mass literacy movement. Distance education at present has lot of potential and scope to provide for educational needs and demand of all those individuals:

- who do not have access to conventional education;
- who are deprived of proper educational facilities;
- who could not continue their education in conventional institutions;
- who are unemployed and want to continue their education from their homes itself i.e. housewives, retired group etc.;
- who are employed and want to improve their skills and educational qualifications;

- who are physically, economically, geographically and socially disadvantaged;
- who are engaged themselves in organized or unorganized sectors.

1.5 PROBLEMS AND ISSUES

All developing countries have recognized the role of education in nation building and made extensive provisions for educational facilities for the people by setting up formal educational institutions of all types. Despite tremendous growth in the number of educational institutions, the demand has far exceeded the availability of educational provisions. Because of population explosion and limited financial resources of the state, the formal system has been unable to meet the needs of all learners. It is imperative to seriously examine the potential alternatives that can cater to the more flexible educational delivery, encourage self learning and would be more cost effective than conventional education. Education does not end when the student leaves the portals of formal institutions; it has to be lifelong 'Education for All'. 'Democratisation of Education', 'Life Long Education' and 'Further Education' have become the watch-words in all the democratic countries of the world in order to ensure good quality of life to the individuals in knowledge based society. The World Education Report of 1998 emphasized that the time to learn is now the whole life time (*Dikshit et al., 2002*).

Thus, the changing social, economic, political and educational needs of the nations have made the administrators and policy framers to move away from conventional practices of education and led to the emergence of distance education all over the world. It is fast emerging as a dominant mode of education of twenty first century, not only in technologically advanced countries but also in the developing and less developed parts of the world where a majority of human population awaits the first dawn of education. "The developing countries cannot afford large amount of resources for expansion of higher education which is pre-requisite for the growth and development of any society. In such a situation the only alternative is to opt, promote and utilize the potential of open and distance education for the advantage of societal development" (*Murthy, 2004*).

A rapid growth of school education system in the country has given rise to pressing requirement of more and more qualified and trained teachers. But, the

conventional face-to-face approach of teacher education followed in regular institutional set up has not been able to meet the growing requirement of teachers. Subsequently, the Government allowed Open Universities and Correspondence units in conventional universities to conduct teacher training programme through DE mode. Thus, distance mode emerged as an alternative to the face-to-face mode because of the large numbers of desiring education. The teacher education through distance mode is for in-service teachers who are either untrained or have degrees in primary level teaching. DE is also used for catering to the needs of teachers who want to improve their qualifications while remaining in the job. Thus, DE provides a solution for generating more and more trained human resource and has taken the education to even unreachable. In order to provide quality teachers, this alternative system needs to be enriched and strengthened through application of research based findings. Distance learning, like any kind of learning, can serve different ends, but it appears mainly to serve those who cannot or do not want to make use of regular classroom teaching. Demanding professional commitments and family-responsibilities of many adults often make attending a conventional, full-time face-to-face course with fixed timetable, a rather unrealistic proposition, and the reasons why adults choose distance education are primarily their convenience, flexibility and adaptability of this mode of education to suit the individual students' needs (*Holmberg, 1989, p.24*).

In teacher training course, both distance and face-to-face learners take the same course content, write similar tests and assignments and appear in the same final examinations. The major difference lies in their learning mode (mode of course delivery) and background characteristics i.e. all distance teacher trainees are in-service teachers with a teaching experience of at least two years. The trainees in two modes of education have their own specific characteristics like age, marital status, personality factors, intelligence, attitude which might affect their academic performance. *Ramchandran (1991)* attempted to compare the attitude of teacher trainees pursuing a regular course with those pursuing a correspondence course. He came up with the major finding that regular teacher trainees had a more favorable attitude towards teaching than correspondence course trainees. *Darshana (2007)* investigated into the study habits of learners in distance education system, the sample consisted of 270 distance learners of Master of Education (M.Ed) course enrolled with the Directorate of Distance Education, University of Jammu. A study habits inventory

and a questionnaire were used to collect data. It was found that distance learners possessed better study habits and significantly better study habits were found among males of scheduled caste and schedule tribe classes. *Kishore and Jyoti (2009)* studied the attitude of teacher trainees towards teaching profession. A sample of 300 teacher trainees was selected from two teacher -training colleges of Shimla and two teacher-training colleges of Mandi district of Himachal Pradesh. Mean, Standard Deviation and't'-test were used to analyze the collected data. Analysis of results revealed that there existed no significant difference in the attitude of male and female, married and unmarried, general and reserved categories of teacher trainees towards teaching profession. It was also reported that there existed significant difference in the attitude of arts and science teacher trainees towards teaching profession. Every trainee in teacher training programme in distance education has a profile which may be similar or different from other trainees. *Holmberg (1995)* points out that there is "no evidence to indicate that distance learners should be regarded as a homogenous group; however as indicated by *Gibson (1998: p-10)*, "distance learners share broad demographic and situational similarities that have often provided the basis for profiles of the 'typical' distance learner in higher education". This need to be further investigated.

Garg and Gakhar (2011) studied the background variables (age, sex, marital status and socio-economic status), personal characteristics (learning style, study habits, achievement motivation and teaching attitude) and academic performance of teacher trainees in distance education and face-to-face mode. A sample of 200 distance teacher trainees was drawn from University School of Open Learning of Punjab University, Chandigarh and 200 on-campus trainees were selected from the three colleges of education affiliated to the same university. The instruments used for this study included Socio-Economic Status (*Bhardwaj, 2001*), Styles of Learning & Thinking-SOLAT Tool (*Venkataraman, 1993*), Deo-Mohan Achievement Motivation Scale (*Deo and Mohan, 1985*), Study Habit Inventory (*Palsane & Sharma, 1995*) and Teacher Attitude Inventory (*Ahluvalia, 1978*). The research showed that 88% of teacher trainees were aged 25 years or above. The teacher trainees of two modes differed significantly on their marital status as the value of 'chi-square' came out to be significant. No significant difference was reported between two groups of trainees on socio-economic status. Distance teacher trainees were found to show significantly better study habits than their counterparts in face-to-face education. Trainees in face-

to-face mode were found to be superior to their counterparts on achievement and motivation. The on-campus trainees depicted more favorable attitude towards teaching than trainees in distance education. The academic performance of face-to-face trainees was significantly higher than the trainees in distance education. However, this study did not include intelligence as a variable which is important for all types of learning.

Learning at a distance is different from learning in the conventional classrooms. In a DE setting, the process of student learning may be even more complex than the conventional 'face-to-face' setting because perceived obstacles encountered by the learners may be different from one distance learner to another. To make the distance learning a success and a powerful alternative to face-to-face mode, the characteristics of the distance learners need to be studied and compared with those in the face-to-face mode. The research studies reviewed here indicate several gaps and inconsistencies in their reported results.

A few basic questions are raised about the characteristics of students under conventional (face-to-face) mode and those studying through DE mode. It is argued that social, psychological, economic and emotional features of the two groups of students are different due to different conditions under which they live and study. These differences may affect not only their academic performance, but also their level of motivation, career aspirations and capacity to benefit from the educative process and its fruits. Of course some studies have been conducted in India and abroad to study these differences and their implications for quality of education provided through distance education mode. *Jumani, Akhlaq, Malik, Chisti & Butt (2010)* analysed the difference in professional competencies of teacher trained through conventional and distance system of education in Pakistan. The study involved a randomly selected group of 600 teachers out of which 300 were trained through conventional and 300 trained through distance system. A questionnaire on a five point scale was developed to collect the data. The data collected through questionnaire were tabulated and analyzed through t-test and mean scores. The study came to the conclusion that the teachers trained through distance system of education were more competent in the area of 'teaching skills' and proficient in the 'management of learning environment' and also the teaching attitude of distance teachers was significantly better than their counterparts. *Levenberg and Caspi (2010)* of Open

University of Israel compared 239 elementary school teachers regarding perceived learning (cognitive and affective) aspects in four learning environments: Formal face-to-face (teachers' professional development courses), Informal face-to-face (teachers' lounge), Formal-online (online teacher professional development courses) and Informal –online (teachers' online forum). Questionnaires were delivered either online or by paper-and-pencil forms. It was found that perceived learning in formal learning environments was higher than in informal learning environment. The interaction between formality and communication media was also significant. In the informal environments, online learners perceived their learning to be higher than face-to-face learners, whereas in formal learning environments there were no such differences. The teachers trained through regular programme had good performance in the lesson planning, demonstration and classroom management as compared to distance learning trained teachers. *Sukati* (*2010*) conducted a study to find out if there was any difference in the academic performance of Bachelor of Arts students at the University of Swaziland (UNISWA) taught by distance education mode and those taught by the full time mode. The findings showed that overall there were no significant differences in the performance of students in the distance education programmes and those in the full-time programme. A few studies indicated that the DE mode faced various problems related to its quality and achievement of students the various courses. The major issues in this regard are:

(i) Questions are being raised about the quality of Distance Education courses.

(ii) Students of face-to-face and DE mode may differ on social, economic, geographical and psychological parameters, which may affect their readiness, motivation, study habits and performance.

These issues need to be examined in order to plan better curricula, better facilities and better methods of teaching. Although, comparative study between Distance Mode and Face-to-Face Mode has been given due emphasis by the researches in education, yet the area of the comparative study of teacher trainees of both the modes in terms of the variables like personality, general intelligence, professional attitude, socio-economic and academic background has remained untouched. However, the investigator came across a few separate research studies related to the teacher trainees which studied the variables professional attitude or

academic background, but all other variables like personality, general intelligence, professional attitude, socio-economic and academic background were not taken together in any study. There are few misconceptions about the utility of DE mode for providing higher education facilities to the masses:

(i) It is believed that DE mode is meant for economically poor people who do not or cannot have access to regular face-to-face mode institutions. It is also believed that face-to-face mode institutions provide better education than the DE mode institutions.

(ii) It is also believed that DE mode is an alternative for academically weaker students who do not find a place/seat in face-to-face institutions where entry is based on cut-throat competition. Those who find themselves unable to compete with others in admission tests, go for distance education mode.

(iii) Students pursuing professional education through DE mode do not develop favourable attitude towards the concerned professions.

(iv) In terms of basic intellectual caliber also, the DE mode students are believed to be less able as compared to face-to-face mode students.

(v) The DE mode students do not develop certain personality aspects which are developed through face-to-face mode.

These considerations point to the need of an intensive research study in Indian conditions to explore whether DE mode and face-to-face mode differ in certain important characteristics of their clients. The basic questions whether DE mode students are really academically weaker, intellectually inferior, financially poor and socially lower as compared to face-to-face mode students need to be answered. In the present study, the investigator has made an attempt to answer these questions. The investigator being a student of education as a discipline, chose to study certain aspects of teacher education in DE mode as compared to face-to-face mode. She felt the need to study these issues, specifically, in the context of teacher education courses run in Indian universities and colleges. These considerations led the investigator to undertake the present study.

Chapter 2

THE PROBLEM

2.1 RATIONALE

Distance education has now become popular in the developed as well as developing countries. It has grown in terms of number of students, institutions and academic respectability in the last thirty years. DE has been used for training teachers at different levels for providing pre-service as well as in-service training and continuing education. *Brophy and Dudley* (*1983*) compared progamme of two groups of teachers. One group was trained through a distance teaching programme and the other by traditional college based approach. The performance of student-teachers was rated by Supervisors, Head Teachers, pupils and by the student-teachers themselves. They came up with important findings and concluded that, though differences between two groups emerged, the distance-trained teachers were as good as the conventionally trained college campus teachers. The main strength of the college trained teachers seemed to be their ability to interact with their pupils whereas the main strength of the distance trained teachers was their class-control and subject knowledge. The evaluation made by them showed that distance teaching did offer a satisfactory alternative and supplement to college based teacher-training. However, the superiority of face-to-face trainees on classroom interaction and those of DE mode on class-control and subject knowledge raises some questions about the differences in the quality of training imparted under each mode.

Allen (*1984*) compared long-distance students and traditional students for their perception of telecourses. The result of this study supported the concept of higher education delivery by "telecourse" and further indicated that this type of alternative learning system should continue to be made available. *Reddy* (*1987*) compared 274 Bachelor of Education students, equally distributed between the correspondence and regular channels of education. Both the streams had the same curriculum, same examination with same papers. The answer sheets were shuffled and evaluation was made which revealed that except one paper, the students of correspondence course had better performance in all other papers as compared to their counterparts in conventional stream. *Cavender* (*1989*) studied teaching attitude of alternatively

certified and traditionally certified beginning teachers and found that there was no significant difference in teaching attitude of two groups of teachers. *Dumas* (*1990*) compared traditional and DE students to find out effectiveness of distance learning as compared to traditional classroom instruction in enhancing student achievement in anatomy and physiology. The sample consisted of 98 anatomy and physiology course students of traditional course and 98 students of distance course via interactive satellite delivery. Result showed that no significant difference existed in achievement and attitude of students in these two modes. *Darter* (*1990*) examined academic achievement, motivation and course completion rates of 26 graduate students in an on-campus and same number in an off- campus distance education classroom situation. He also found no significant difference in motivation, academic achievement and course completion rates in the two modes. *Chen Ivan* (*1991*) studied comparative effectiveness of satellite distance and conventional face-to-face delivery methods in promoting teaching and learning. The findings of this study showed that there was no significant difference in promoting teaching and learning through satellite distance method and conventional face-to-face method.

Richard (*1993*) compared 160 teacher trainees in traditional and 160 trainees in distance mode of teacher education. The result indicated that distance students achieved higher scores than the traditional students on two objective examinations designed to assess achievement. Difference in student learning style, academic achievement measures and gender did not significantly influence achievement. *Prasad and John* (*1993*) compared development of skills through teaching practice and attitude of B.Ed trainees of distance and conventional institutions. The findings of their studies revealed that the trainees of DE were in no way inferior to their counterparts in conventional institutions with regard to level of perception, self-preparation and achievement of objectives of practice teaching. *Charles* (*1994*) study also supports superiority of DE course over traditional classroom teaching method. The purpose of this study was to contribute to the literature on traditional versus distance education. Therefore, control group (regular) and experimental group (satellite) were taught the same course. The students were exposed to pre-test and post-test. The results of the investigation showed that DE course was more effective. *Singh and Chaturvedi* (*1996*) conducted a study to compare intelligence and attitude towards education of off-campus and on-campus students. Ravens' Progressive

Matrices and Attitude Towards Education Scales were administered on 500 off-campus and 500 on-campus students randomly selected from the undergraduate and post-graduate classes of Allahabad and Faizabad regions of Uttar Pradesh. Analysis was done with the help of discriminant function analysis of variance. Off campus students of rural culture scored higher on intelligence test than their urban counterparts. Significant differences were also found between off campus and on campus students with respect to intelligence and attitude towards education when both the variables were considered together. *Sahoo and Khan* (*1998*) conducted a study with 102 trainees of Basic Training Institute Level who were undergoing inservice distance teacher training in the state of Madhya Pradesh with regard to their attitude and reactions towards various components of in-service distance teacher training. In the first phase, open ended interviews were conducted with in-service primary teachers joining distance education programme. In the second phase the questionnaire was administered on a sample of teacher trainees. The findings showed their favourable attitude to printed materials, personal contact programmes and use of modern technology in distance teacher training. *Farah* (*2000*) made a comparative study of teaching competencies of the teachers trained through the formal system of education and those through the DE system. The objective of the research was to study the relationship between the presage, process and product variables of teaching competencies of the teachers trained through both the modes. The sample of the study consisted of randomly selected 70 teachers trained through the formal system and other randomly selected 70 teachers trained through distance system of teacher preparation. The relationship between presage process and product variables was investigated using Pearson Product Moment Coefficient of Correlation. The investigator found no significant relationship between the knowledge and the attitude of the teachers trained through the formal mode as well as through the distance mode.

Sharma (*2001*) conducted a study to find out the strengths and weaknesses of the present teacher education programmes through distance mode. The tools used were structured interviews and two questionnaires – one for faculty and one for students. The responses were received from 14 faculty members and 30 students of Open Universities (OUs), Correspondence Course Institutes (CCIs)/Directorates of Distance Education (DDEs). Data collected with the help of tools were analysed in terms of frequency and percentage of each item of the questionnaire. It was found that

all the students enrolled for Bachelor of Education programmes were graduates, but 25% of them were not regular working teachers. In fact, majority of the students admitted by the CCIs were pre-service teachers, although the requirement for admission was teaching experience of one to two years. Performance of students of the Open Universities was comparatively better than those of the CCIs/DDEs. All CCIs/DDEs and OUs had inadequate faculty strength. *Jain (2007)* conducted a study with the objective to compare the teaching effectiveness of teachers trained through distance mode with respect to sex, type of school and teaching experience. The teaching effectiveness observation scale was developed by the investigator to get the data related to classroom teaching. The teaching effectiveness observation scale was administered to 75 teachers teaching in secondary classes of Delhi schools to collect data. The study revealed that the teaching effectiveness of teachers with respect to sex, type of school and teaching experience were found to be significant. It was found that less experienced female teachers in private schools exhibited better classroom teaching.

The above debate putting forth evidences against and in favour of the courses through DE mode is inconclusive so long as both positions are empirically established. The charges, against the Distance Education courses that they are providing poor quality training and are nothing but commercialization of education in India, are hypothetical statements and invalid criticisms till they are empirically established. Since, the investigator is a student of education, as a discipline, she was more interested in teacher education courses run through conventional and DE mode. A review of the empirical studies conducted in this area reveals that very few studies have been conducted in India to enable us to draw any meaningful inference regarding effectiveness of the two modes of teacher training. Studies also need to be conducted to compare the two modes on certain relevant variables which might account for their difference. Triggered by the heat of the debate about the effectiveness of DE mode for the training of teachers vis-à-vis conventional face-to-face teaching mode, the investigator was inspired to undertake this study to compare certain personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds of teacher trainees under face-to-face and distance education mode.

2.2 STATEMENT OF THE PROBLEM

The problem investigated in this study was given the following formal title:

"A comparative study of certain personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds of teacher trainees under face-to-face and distance education mode."

2.2.1 DEFINITIONS OF KEY TERMS

Before going further into the actual investigation, it was considered necessary to explain the meanings and interpretations of the terms used by the investigator. Although, these terms are familiar to a common researcher and a common teacher in education, yet, it was necessary to give the operational definitions of the variables used in the statement of the problem. The statement of the problem, as given above, involves seven key terms or variables viz. personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds, face-to-face mode and distance mode. As clear from the title of the study, the choice of mode of training (face-to-face vs. distance mode) was the dependent variable and other five variables- personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds were the independent variables.

PERSONALITY FACTORS

For a long time, the term "Personality" has been abstracted to account differences and consistencies of human beings. There are a number of popular definitions having different meanings attached to the term personality. *Allport (1937)* defined personality in a comprehensive manner covering physical, psychological, motivational and moral aspects of human behavior. He defined it as "the dynamic organization within the individual of those psycho-physical systems that determine his unique adjustment to his environment." Since personality is a comprehensive and elusive psychological phenomenon, psychologists have tried to understand and measure it from different dimensions characterized by quality of uniqueness. In the present study, the investigator has used the concept of personality as given by Cattell (*Pandey, K.P, 2007*) in terms of source traits. Here, 16 primary source traits of personality are covered by the 16 PF test. The test will be discussed in detail in the next chapter.

GENERAL INTELLIGENCE

Intelligence has been defined as a global capacity or a composite of several intellectual skills. According to Wechsler, intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with his environment. Raven had suggested that in order to act intelligently in any situation, a person needs both the necessary information and the capacity to form comparisons and reason by analogy (*Pandey K.P, 2007*). In this research work, Raven's Progressive Matrices (1983) was used to measure the intelligence of teacher trainees of two modes.

PROFESSIONAL ATTITUDE

It has been defined as a state of mental and emotional readiness on the part of professionals to react to any professionally significant situation in a manner that gives first place to the interests of society and the profession, that demonstrates appreciation of the situation's educational implications, and that indicates ability and desire to cooperate with others toward the solution of the problem involved. In this research work, professional attitude refers to the attitude of teacher trainees in the two modes of training towards teaching as a profession. The Teaching Attitude Scale, used in the present study was a standardized instrument developed by Dr. J. C. Goyal and published by National Psychological Corporation, Agra, India.

SOCIO-ECONOMIC BACKGROUND

According to International Dictionary of Education the term socio-economic status may be defined as: "Person's position in any group, society or culture as determined by wealth, occupation, education and social class." The term "socio-economic" status means the background or standing of one or more persons in the society on the basis of both social and financial situation. There are certain factors associated with social and economic well-being of an individual that constantly influence the development of his/her personality. The set of socio-economic variables like nature of family, number of members in the family, education of members, family profession, monthly income, membership of clubs and number of vehicles were considered in the present study to assess the socio-economic background and their weightage scheme is discussed further in chapter 3 of this report. A Personal Data Sheet was developed by

the investigator herself to gather information about the socio-economic background of respondents.

ACADEMIC BACKGROUND

Academic achievement, academic background and academic performance are often used interchangeably. *Good's dictionary* (*1945*) defined the academic achievement as "the knowledge attained or skills developed in the school subjects, usually designated by test scores or by marks assigned by teachers or by both." In the present study, academic background was considered as the overall academic performance of individuals in various examinations throughout their academic career prior to entering B.Ed programme i.e. high school, intermediate, graduation and post graduation. A weighted combination of scores in these examinations was used as a measure of academic background. The weightage scheme is discussed further in chapter 3.

FACE-TO-FACE TEACHER EDUCATION MODE

Face-to-face mode of training is also described by the terms "formal education", "conventional education" and "regular education". Face-to-face education is learning within an organized institution with established time schedules, curricula and syllabus taught by the teachers and learnt by the students, followed by a system of examination. In the present study, regular face-to-face mode of training was the system of traditional face-to-face teaching the Bachelor of Education trainees involving the teaching of 40 lessons by students under an expert supervision as adopted by the affiliated colleges of Dr. Bhim Rao Ambedkar University, Agra, Uttar Pradesh.

DISTANCE TEACHER EDUCATION MODE

Distance education is described by a variety of labels, such as "correspondence education", "home study", "independent study", "external studies", "distance teaching" and "open learning". A more or less generally accepted definition of distance education is proposed by *Holmberg* (*1990*) - The term distance education covers the various forms of teaching and learning at all levels which are not under the continuous, immediate supervision of tutors present with their students in lecture rooms or on the same premises but which nevertheless benefit the learners by the planning, guidance and tuition (i.e. tutoring, teaching) of the staff of a tutorial

organization. Its main characteristic is that it relies on noncontiguous, i.e. mediated, communication (*International Encyclopedia of Education, p-1557*). In the present research work, distance education mode was the system of educating B.Ed students at a distance adopted by Uttar Pradesh Rajarishi Tondon Open University (UPRTOU), Allahabad, India. The distance mode of training involved periodic assignments, personal contact programmes and teaching of 40 lessons by the trainees in schools. The B.Ed programme was being run at 10 study centres of UPRTOU spread in various colleges affiliated to the Dr. B.R. Ambedkar University, Agra.

2.3 OBJECTIVES OF THE STUDY

Every research study deals with solving a problem of human interest. Therefore, the researcher had a definite purpose in mind. She had certain specific goals to achieve through her research work. Such specific goals or purposes are technically termed as 'objectives'. Every research study must have some objectives to achieve without which no research can be fruitful. The entire research process is guided by objectives, which have to be explicitly and precisely spelled out by the investigator in advance. The present study is aimed at achieving following objectives:

(i) To study the personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds of teacher trainees under face-to-face mode of education.

(ii) To study the personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds of teacher trainees under distance education mode.

(iii) To compare the personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds of teacher trainees under face-to-face and distance education mode.

(iv) To study the gender differences on the above variables between teacher trainees of both the modes.

(v) To study the interaction of training mode, gender and marital status on the personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds of teacher trainees.

2.4 THE HYPOTHESES

In order to achieve the objectives of this study, an investigator formulates hypotheses. A hypothesis is an informed proposition or speculation about relationship between two or more variables that may be observed concomitantly. Hypothesis may be derived from a carefully formulated model that attempts to explain a class of outcomes. Hypothesis may be formulated to guide the data collection and analysis or else an 'empirical' approach may be taken in which data on many variables are collected and many different analyses are attempted, once the data in. After defining the problem conceptually, an investigator formulates a tentative proposition about the relationship between two or more variables under investigation. Such a tentative proposition is known as 'hypothesis'. Hypothesis may be defined as an intelligent guess or tentative solution for a research problem. The hypothesis may be stated as a simple sentence or a question.

We already know that the teaching experience, maturity level and age of the teacher trainees pursuing DE are at a higher level. Accordingly, following research hypotheses were framed and empirically verified:

(i) The teacher trainees under face-to-face and distance mode of training differ significantly on personality factors.

(ii) The teacher trainees under face-to-face and distance mode of training differ significantly on the level of general intelligence.

(iii) The teacher trainees under face-to-face and distance mode of training differ significantly on the professional attitude.

(iv) The teacher trainees under face-to-face and distance mode of training differ significantly on the socio-economic background.

(v) The teacher trainees under face-to-face and distance mode of training differ significantly on the academic background.

(vi) Male and female teacher trainees of face-to-face and distance mode of training differ significantly on personality factors.

(vii) Male and female teacher trainees of face-to-face and distance mode of training differ significantly on the level of general intelligence.

(viii) Male and female teacher trainees of face-to-face and distance mode of training differ significantly on the professional attitude.

(ix) Male and female teacher trainees of face-to-face and distance mode of training differ significantly on the socio-economic background.

(x) Male and female teacher trainees of face-to-face and distance mode of training differ significantly on the academic background.

(xi) There is a significant interaction of training mode, gender and marital status on personality factors.

(xii) There is a significant interaction of training mode, gender and marital status on the level of general intelligence

(xiii) There is a significant interaction of training mode, gender and marital status on the professional attitude.

(xiv) There is a significant interaction of training mode, gender and marital status on the socio-economic background.

(xv) There is a significant interaction of training mode, gender and marital status on the academic background.

2.5 DELIMITATIONS

Individuals differ in feelings, drives and motivations. Research in social sciences is a difficult task because it deals with human behavior, which being heterogeneous, is a complex affair. Therefore, it is not easy to generalize it with certainty. However, discovering principles of human behavior is possible, though it is difficult. Every research study is delimited in several ways, because generally it is not possible to study the entire mass of variables associated with a given problem in a single study. The long list of relevant variables cannot be exhausted by a single study. It has to be delimited in terms of population covered, sample selected, scope of generalizations of findings and so on. Therefore, the present study is no exception in this regard and has delimitations which are as follows:

(i) Out of the array of factors affecting students' choice of learning mode only personality factors, professional attitude, socio-economic and academic backgrounds were selected for investigation in the present study.

(ii) Though, about 14 Open Universities and 130 dual mode institutions are offering DE courses in India, the investigator selected the students of Uttar Pradesh Rajarishi Tondon Open University located at

Allahabad, which has its jurisdiction spread over the entire state of Uttar Pradesh (U.P). The sample of DE students was selected from four study centres of Agra, Bulandshahar, Kanpur and Moradabad.

(iii) Out of various Central and State Universities in India, offering B.Ed courses through faced-to-face mode only, students enrolled in affiliated colleges of Dr. Bhim Rao Ambedkar University, Agra, Uttar Pradesh, were taken up for study.

This study was conducted with the above delimitations and constraints in mind. Any generalization should be made keeping in view these delimitations.

Chapter 3

DESIGN AND METHODOLOGY

Research is a systematic effort in the direction of solution of a problem having direct or indirect bearing on human welfare. There may be more than one approach or methodology that determines the dependability of research findings. It is said that success of a researcher lies in his choice of methodology to be followed. Methodology includes all the plans, techniques and strategies followed in carrying out a research study. This study was a descriptive research in which analytical survey method was employed. It involved a clearly defined research problem with definite objectives. It required expert and imaginative planning, careful analysis and interpretation of data gathered and logical and skilful reporting of the findings. This chapter reports the detailed design of the study including technique of selection of the sample, development/selection of research tools and methods followed in data collection and analysis.

3.1 POPULATION AND SAMPLE

A research study is concerned with acquiring knowledge about the characteristics of a population or several populations. Most of the times, it is not necessary and sometimes, not possible to study the entire population in a single research study. Basically, research is a process of drawing inferences about a large aggregate of subjects of certain kind on the basis of the study of a small sample of that aggregate or population. The process of sampling refers to the method of selecting a small part or specimen of a large universe of subjects in order to study some quality or characteristic of the whole population. Sampling is an art of determining how many elements in a population are to be selected and how. The statistical values, which are based on the sample, are called 'statistics'. On the basis of statistics, corresponding population values can be estimated which are called 'parameters'. So, a statistical enquiry involves estimating an unknown 'parameter' on the basis of 'statistics' obtained from a sample. This process is known as statistical inference (*Best, 1983*). The present investigation was based on comparison of two populations one of teacher trainees pursuing the Bachelor of Education course under the face to face mode from Dr. Bhim Rao Ambedkar University, Agra, and the other teacher trainees pursuing

the Bachelor of Education course, under the distance education mode from the Uttar Pradesh Rajarishi Tondon Open University (UPRTOU), Allahabad. Thus, the present study compares two populations of teacher trainees on a few relevant variables.

The teacher trainees of face to face mode were selected from colleges located at Aligarh, Mathura and Agra which are affiliated to Dr. Bhim Rao Ambedkar University, Agra. The cluster sampling technique was used. The distance mode teacher trainees were approached at the study centers of UPRTOU located at the cities of Kanpur, Moradabad, Agra and Bulandshahar in the state of Uttar Pradesh. A sample of 252 teacher trainees was selected from the population of trainees pursuing studies under DE mode, and a sample of 259 teacher trainees was selected from the population of those undergoing training under face-to-face mode. Thus, in all 511 teacher trainees were involved in the study. The details regarding the institutions and selected teacher trainees from each city are shown in Table 3.1 and Table 3.2.

Table 3.1: Details of the sample (Face-to-Face Teacher Trainees)

S.No.	City	Name of Teacher Training Institution/College	No. of Teacher trainees Selected		
			Male	Female	Total
1.	Agra	Raja Balwant Singh (RBS) College	35	20	55
2.	Aligarh	Dharam Samaj College	25	24	49
		Tika Ram Girls Degree	0	30	30
		Aligarh Teacher Training College	28	25	53
		Shivdhan Singh Smriti Mahavidyalaya	15	17	32
3.	Mathura	BSA (PG) College	12	28	40
		Grand Total	115	144	259

Table 3.2: Details of the sample (Distance Teacher Trainees)

S.No.	City	Name of Teacher Training Institution/College	No. of Teacher trainees Selected		
			Male	Female	Total
1.	Agra	Raja Balwant Singh (RBS) College	30	24	54
2.	Bulandshahar	Shyamlal Saraswati PG College	42	21	63
3.	Kanpur	Vikramajit Singh Sanatan Dharm (VSSD) College	55	19	74
4.	Moradabad	Hindu College	29	32	61
		Grand Total	156	96	252

3.2 RESEARCH TOOLS

In carrying out a research study, many considerations have to be kept in mind while selecting research tools that are used to collect information or data. These considerations are objectives of the study, availability of suitable tools and their characteristics as such. Dependability of research findings is not only determined by planning, methodology, data analysis and interpretation, but also by quality of tools used. This study involved the study of teacher trainees' choice of mode of learning in relation to certain personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds of teacher trainees. So, in order to obtain required information for the study, the following research tools were used by the investigator:

1. Sixteen Personality Factor Questionnaires by Cattell (1991 Edition).
2. Raven's Progressive Matrices (1983).
3. Teacher Attitude Scale hy J. C. Goyal (2004).
4. Personal Data Sheet seeking information about socio-economic and academic backgrounds (developed by the investigator).

3.2.1 SIXTEEN PERSONALITY FACTOR TEST 'The 16PF' Form 'A'

The 16 PF Form 'A' prepared by Raymond B. Cattell and Herbert W. Eber measures sixteen functionally independent traits and psychologically meaningful dimensions of

personality. These sixteen dimensions or scales are essentially independent i.e. the correlations among one another are low. It contains 187 items in all with 10-13 items for each dimension or factor. The questions are arranged in a roughly cyclic order guided by a plan to ensure variety and interest of the examinee. Three alternative responses are provided for each item. The description of sixteen personality factors is as follows:

Factor A (Cool vs. Warm)

People who score low on factor A tend to be stiff, cool, skeptical and aloof. They like things rather than people, working alone, and avoiding compromises of viewpoints. They are likely to be precise and rigid in their way of doing things and in their personal standards. People who score high on Factor A tend to be good-natured, easygoing, emotionally expressive, ready to cooperate, attentive to people, softhearted, kindly and adaptable. They like occupations dealing with people and socially impressive situations, and readily form active groups.

Factor B (Concrete-thinking vs. Abstract-thinking)

The person scoring low on Factor B tends to be slow to learn and grasp and rated as dull. This dullness may be simply a reflection of low intelligence. The person who scores high on Factor B tends to be quick to grasp ideas, a fast learner and intelligent. This is related to mental capacity of an individual.

Factor C (Affected by feelings vs. Emotionally stable)

The person who scores low on Factor C tends to be low in frustration -tolerance under unsatisfactory conditions, easily annoyed and emotional. The person who scores high on Factor C tends to be emotionally mature, stable realistic about life, unruffled, possessing ego strength.

Factor E (Submissive vs. Dominant)

Individuals scoring low on Factor E tend to give way to others, to be docile, and to conform. They are often dependent, confessing, and anxious for obsessional correctness. Individuals scoring high on Factor E are assertive, self-assured and independent- minded. They tend to be austere, law unto themselves, hostile or extrapunitive and authoritarian.

Factor F (Sober vs. Enthusiastic)

Low scorers on Factor F tend to be restrained, reticent, and introspective. They are sometimes dour, pessimistic and unduly deliberate. High scorers on this trait tend to be cheerful, active, talkative, frank, expressive, effervescent and carefree.

Factor G (Expedient vs. Conscientious)

People who score low on Factor G tend to be unsteady in purpose. They are often casual and lacking in effort for group undertakings and cultural demands. People who score high on Factor G tend to be exacting in character, dominated by sense of duty, persevering and responsible. They are usually conscientious and moralistic.

Factor H (Shy vs. Bold)

Individuals who score low on this trait tend to be shy, withdrawing, and cautious. They usually have inferiority feelings and tend to be slow and impeded in speech and in expressing themselves. Individuals who score high on Factor H are sociable, bold, ready to try new things, spontaneous and abundant in emotional response.

Factor I (Tough-minded vs. Tender-minded)

People who score low on Factor I tend to be tough, realistic, "down to earth", independent , responsible but skeptical of subjective, cultural elaborations. People who score high on Factor I tend to be emotionally sensitive, day-dreaming, artistically fastidious and fanciful. They are sometimes demanding of attention and help, impatient, dependent, temperamental and not very realistic.

Factor L (Trusting vs. Suspicious)

The person who scores low on Factor L tends to be free of jealous tendencies, adaptable, cheerful, uncompetitive, concerned about others and a good team worker. They are open and tolerant and usually willing to take a chance with people. People who score high on Factor L tend to be mistrusting and doubtful. They are often involved in their own egos and are self- opinionated and interested in internal life.

Factor M (Practical vs. Imaginative)

Low scorers on Factor M tend to be anxious to do the right things, attentive to practical matters, and subject to the dictation of what is obviously possible. They are concerned over detail, able to keep their heads in emergencies, hut are sometimes

unimaginative. High scorers on Factor M tend to be unconventional, unconcerned over everyday matters, self motivated, imaginatively creative, concerned with "essentials", often absorbed in thoughts, and oblivious of particular people and physical realities.

Factor N (Forthright vs. Shrewd)

Individuals who score low on Factor N have a lot of natural warmth and a genuine liking for people. They are uncomplicated, sentimental and unvarnished in their approach to people. Individuals who score high on Factor N tend to be polished, experienced and shrewd. Their approach to people and problems is usually perceptive and hard headed.

Factor O (Self-assured vs. Apprehensive)

Persons with low scores on Factor O tend to be unruffled and to have unshakeable nerve. They have a mature, unanxious confidence in themselves and their capacity to deal with things. Persons with high scores on Factor O have a strong sense of obligation and high expectations of themselves. They tend to worry and feel anxious and guilt-stricken over difficulties.

Factor Q_1 (Conservative vs. Experimenting)

Low scorers on Factor Q_1 are confident in what they have been taught to believe, and accept the "tried and true" even when something else might be better. They are cautious and compromising in regard to new ideas. High scores on Factor Q_1 tend to be interested in intellectual matters and to have doubts on fundamental issues. They are skeptical and inquiring regarding ideas, either old or new.

Factor Q_2 (Group-oriented vs. Self sufficient)

Individuals who score low on Factor Q_2 prefer to work and make decisions with other people and like and depend on social approval and admiration. They tend to go along with the group and may be lacking in individual resolution. Individuals who score high on Factor Q_2 are temperamentally independent, accustomed to going their own way, making decisions and taking action on their own.

Factor Q_3 (Undisciplined Self-conflict vs. Following Self-image)

People who score low on Factor Q_3 will not be bothered with will control and have little regard for social demands. They are impetuous and not overly considerate, careful, or painstaking. People who score high on Factor Q_3 tend to have strong control of their emotions and general behavior, are inclined to be socially aware and careful, and evidence what is commonly termed "self-respect" and high regard for social reputation.

Factor Q_4 (Relaxed vs. Tense)

Individuals who score low on Factor Q_4 tend to be sedate, relaxed, composed and satisfied. Individuals who score high on Factor Q_4 tend to be tense, restless, fretful, impatient and hard driving.

RELIABILITY

Every research tool has some essential characteristics, one of which is 'Reliability'. If a test is used repeatedly on the same sample under same conditions, it should not give different results. In other words, its results should be consistent. The consistency, with which a test measures whatever it measures, is known as its reliability. There are several methods of estimating reliability of a measuring tool. In test-retest method of reliability the single form of the test is administered twice on the same sample with a reasonable time gap. In this way, the same test yields two independent sets of scores. The two sets, when correlated, give the values of reliability coefficient (*Singh, 1997*). The reliability of this test was estimated by the test constructors.

While there are many ways to estimate reliability, the test retest method seems especially appropriate. With this method, the 16 PF was administered by the constructors to a sample of people on two separate occasions; the correlations between the sets of scores from the two administrations were the reliability estimates. The short interval test-retest reliability coefficients are shown in the adjoining table. These values were obtained using test-retest method on 146 American subjects which comprised of 79 employment counselors and 67 undergraduates. These details are available in the test manual.

16 PF Reliability Coefficient: Test-retest after 2 weeks

Factor	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
Form A	.81	.58	.78	.80	.79	.81	.83	.77	.75	.70	.61	.79	.73	.73	.62	.81

Source: *Administrator's Manual for the 16 PF Questionnaire, P-11, Published by the Institute for Personality and Ability Testing, 1991.*

VALIDITY

Validity means truth or fidelity; it refers to the degree to which a test measures what it claims to measure. In other words, validity is the extent to which a test does the job for which it is meant. Therefore, validity depends upon purposefulness of a test. Validity is always for measurement of a particular variable. That is why there is nothing like general validity. There are as many types of validity as there are purposes of testing e.g. construct, content, curricular or predictive validities. When a test is constructed so that the contents of its items measure what the whole test claims to measure, the test is said to have content or curricular validity. Content validity of a test is examined in two ways: (i) by the expert's judgement (ii) by statistical analysis. The 16 PF test had high criterion-related validity. The details are available in the test manual.

Validity of the 16 PF Scale

Factor	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
Form A	.79	.35	.70	.63	.83	.67	.92	.70	.49	.44	.41	.71	.62	.70	.68	.57

Source: *Administrator's Manual for the 16 PF Questionnaire, P-16, Published by the Institute for Personality and Ability Testing, 1991.*

Scoring

Scoring was done by fitting and aligning the first stencil key over the answer sheet and counting the marks visible through the holes for respective factor, allowing either 2 or 1, as indicated by the number adjacent to the hole. These scores were summed and the total was entered in the space given for raw score of respective factor. But factor B was peculiar in that each correct mark visible gave a score of 1 only. The raw

scores of all sixteen factors were converted to standard scores (sten scores) using standardization tables (norm tables). Norm tables were available in three groups: high school students, university and college undergraduate students, and general adult population. Within each group tables were available for male, female and for male and female together. To convert the raw scores into standard (sten) scores, the raw score for respective factor was given in one line and the corresponding sten score above it in the norm table. The procedure was done for all the sixteen factors as suggested in the test manual.

3.2.2 RAVEN'S STANDARD PROGRESSIVE MATRICES (SPM)

For measuring intelligence of subjects, the researcher studied the various published tests of intelligence. Finally, the Raven's Progressive Matrices prepared by J. C. Raven's, J. H. Court and J. Raven in 1938 was selected for use in this study. This test was originally developed in the mid-1930 and was revised and standardized many times in the years 1938, 1943, 1948, 1972, 1979 and 1983. The investigator used 1983 edition of SPM reprinted in 1991. The scale is intended to cover the whole range of intellectual development from the time a child is to grasp the idea of finding a missing piece to complete a pattern, and sufficiently long to assess a person's maximum capacity to form comparisons and reason by analogy without being unduly exhausted or unwieldy.

The Standard Progressive Matrices (Sets A, B, C, D & E) is a test of person's mental capacity. The scale consists of 60 problems divided into five sets of twelve each. In each set, first problem is easy and other problems become comparative difficult as one proceeds on. The reliability and validity of the test as reported in the test manual are discussed below.

RELIABILITY

Since SPM is a homogenous test, one would expect a high correlation to emerge with split-half measures of reliability. The majority of studies giving consistency data report correlations of at least 0.90 with a modal value of 0.91. Over forty studies dealing with the reliability of the SPM, have been reported in the literature. From the original studies on SPM, *Raven (1948)* and *Foulds and Raven (1948)* found reliabilities ranging from 0.83 to 0.93, with the higher values being associated with younger subjects (Under 30).Well conducted studies, therefore, indicate satisfactory

retest reliability for SPM in the period up to one year. The figures have been reported in the test manual.

VALIDITY

The concurrent and predictive validities of SPM vary with the age, possibly sex and homogeneity of the sample, the method of assessment of the criterion to which the test will be related and the reliabilities of the test and criterion measures in the content considered for adolescents, correlation of SPM with the Binet and Wechsler scales range from +0.54 to +0.86. The external criterion commonly adopted in predictive validity investigations is scholastic achievement assessed some time after the administration of SPM. Validity Coefficient reported in studies with English and non-English speaking children and adolescents generally range up to +0.70. The figures have been reported in the test manual.

ADMINISTERING THE SPM

For administration of the test the investigator visited the selected institutions personally. The researcher explained the intelligence test to the student before distributing the booklets to them along with the answer sheets. Researcher pointed out to the figure of A_1 and explained to them that the six figures are given and one figure exactly fit into the upper figure. By seeing the figures students could tell the answer. The researcher asked them to write the answer in the answer sheet provided to them. The total time taken for the administration of the intelligence test was about 25 minutes.

SCORING

Scoring of intelligence test used was done by using the key sheet given in the manual of the test, in which the answers of right and wrong were available. The right answers were scored '1' and wrong answer '0' and then the total points were summed up to get the total score.

3.2.3 TEACHER ATTITUDE SCALE (TAS)

For measuring the attitude of teacher trainees of both distance and face-to-face modes, the Teaching Attitude Scale was used in the present study which is a standardized scale developed by *Dr. J. C. Goyal* and has been published by National Psychological Corporation, Agra. It is a scale consisting of 22 items. It was developed by using

Thurstone's technique of attitude scale construction. It measures attitude towards the profession of teaching.

RELIABILITY

The reliability of the scale as reported in the test manual, was determined by the split half method. It was found to be 0.90 by the Pearson Product-Moment correlation method (for the half of the test). When corrected by Spearman-Brown formula for the whole test, co-efficient of correlation was 0.95. The sample consisted of 300 teachers working in secondary school.

VALIDITY

The investigator (*Goyal, J.C.*) collected statements of opinions from teachers about their profession. Out of the list of 125 statements, 98 statements were retained. The statements of opinion were got rated on an 11-point scale by 88 teacher judges. The scale value of each statement was determined by the median value obtained from the rating of judges. Content validity of the scale was ensured by the judges who carefully rated each item. The validity of the scale was also determined by self-ratings by subjects on a graphic continuum of the scale. It was found to be 0.78.

SCORING

Each statement had been assigned a scale value. The attitude score of a subject is the sum total of the scale values of the statements agreed by him divided by the number of statements marked by him/her. It may be represented by the following formula

$$Score = \frac{S_1 + S_2 + S_3 + \ldots\ldots\ldots}{N}$$

where, S_1, S_2, S_3..... are the scale values of statements agreed to and 'N' is total number of statements . Thus, the attitude score of a subject is the average score value of the statements endorsed by him/her. *It is to be noted that a lower score indicates a favorable attitude and the higher score indicates unfavorable attitude of a subject.*

3.2.4 PERSONAL DATA SHEET (PDS)

In order to gather certain personal information about the socioeconomic and academic backgrounds of respondents a Personal Data Sheet was developed by the investigator herself. PDS was a kind of information blank which sought to obtain information

regarding the socio-economic background and academic background of the subjects included in the sample. The socio-economic background was determined by using the following variables: marital status, number of dependents in the family, academic qualification of parents and grandparents, occupation (father), income of the family, membership of any club and number of vehicles. The academic background of the respondents was measured in terms of percentage of marks (Division) obtained by them in examinations of class X, XII, Graduation and Post-Graduation. It was a combination of achievement scores of the respondents at various levels of education.

Each respondent was asked to supply the related information by filling in the blank spaces provided for the purpose. The scoring scheme was developed by the investigator herself which is given in the tables below:

Table 3.3: Weightage scheme for Academic Background

Division	I (60% and above)	II (45% - 60%)	III (below 45%)
Weightage	3	2	1

Following socio-economic variables were included in the personal data sheet to obtain the measure of socio-economic background score of respondents.

In the component 'Nature of Family', there were two categories. Nuclear Family is a family group consisting of a pair of adults and their children whereas Joint Family is an extended family arrangement of parents, their children, and the children's spouses and offspring in one household. The score allotted to them are given below in Table 3.4:

Table 3.4: Weightage scheme for Nature of Family

Nature of Family	Nuclear	Joint
Weightage	2	1

In the component, "No. of dependent in the family", there were 3 categories. Within this variable, the scores allotted to them are given below:

Table 3.5: Weightage scheme for no. of dependent in the family

Number of dependent	1 - 3	4 – 5	6 and above
Weightage	3	2	1

The component parental and grandparental education contained 5 categories. Score allotted to each category are given below;

Table 3.6: Weightage scheme for parents & grandparents education

Level of Education	Illiterate	Up to class V	Up to class X	Up to class XII	Higher Education
Weightage	0	1	2	3	4

The component "Family profession" (Father) contained 6 categories: scores allotted to each category are given as below:

Table 3.7: Weightage scheme for Family (Father) profession

Profession	Diplomat	Professional/Engineer/ Doctor/Lawyer	College Teacher	School Teacher	Worker	Farmer
Weightage	6	5	4	3	2	1

In income component, there were five categories of monthly income groups, within this variable, income categories with the scores allotted to them are given below in Table 3.8:

Table 3.8: Weightage scheme for monthly income

Income (Rs.)	5,000 & below	5,001-15,000	15,001-30,000	30,001-50,000	Above 50,000
Weightage	1	2	3	4	5

In the component "Membership of club", there are two categories and the scores allotted to them are given below:

Table 3.9: Weightage scheme for Membership of club

Member	Yes	No
Weightage	1	0

In the component "No. of vehicles", there were following categories with their weightage:

Table 3.10: Weightage scheme for No. of vehicles

Vehicle	1 Car	1 Two-Wheeler (Scooter/Motorcycle)	1 Cycle
Weightage	3	2	1

The socio-economic background score of an individual was a combination /sum of all the weightages scored by him/her on the above components from Table 3.4 to Table 3.10.

3.3 COLLECTION OF DATA

As per the requirement of the study, the investigator had to collect the data from the teacher trainees pursuing B.Ed. from Distance Mode and Face-to-Face Mode. To seek the co-operation of the Heads of the teacher training colleges of different cities, the investigator obtained an introduction letter from the Chairperson of the Department of Education, Aligarh Muslim University, Aligarh in which he had requested the concerned Heads of the teacher training colleges to extend requisite co-operation to collect data from teacher trainees under Face-to-Face mode.

In order to collect the data of Distance Mode Teacher Trainees, the investigator obtained a list of study centres of B.Ed. program of Uttar Pradesh Rajarishi Tondon Open University. She reached the selected study centers during the personal contact programs and requested heads of institutions to accord permission to collect data from teacher trainees. After receiving permission of the heads of the institutions the investigator approached the concerned teacher trainees and administered to them all the four tools in the same sitting. During this process the

investigator assured the students that the informations given by them were for research work only and would be kept confidential. It is a matter of great pleasure that this assurance along with the importance of this research work was highly convincing and proved to be very useful in obtaining relevant and genuine data. The investigator administered all the four tools, Cattell's 16 PF questionnaire, Raven's Progressive Matrices, Teacher Attitude Scale by J.C. Goyal and Personal Data Sheet seeking information about academic and socio-economic background to the students one by one after giving necessary instructions.

3.4 DATA ANALYSIS TECHNIQUES

Since computer facilities are now readily available, the investigator decided that the data analysis should be carried out on the computer. Before using the SPSS package, the raw data were tabulated in terms of rows and columns. The first column of the data matrix indicated the identity of the subject, that is, his serial number. The other columns listed the raw scores for each individual on all variables. Although, the study involved only five major variables, namely, personality, intelligence, professional attitude, socio-economic background and academic background, the data sheet of raw data used 24 columns including column for serial number/name. The Mode of Training, Gender, Marital Status, socioeconomic background and academic background were listed in separate columns. The 16 PF resulted in 16 scores for each individual, one on each factor, and therefore, were listed in separate 16 columns. Thus, the data sheet consisted of 22 columns. The format of data matrix is given in the form of the adjoining table.

Table 3.11: Tabulation of Raw Data

S.No/ Name	Training Mode	Gender	Marital Status	Academic Score	Socio-Economic Score	Cattell's 16 PF Factors															
						A	B	C	E	F	G	H	I	L	M	N	O	Q_1	Q_2	Q_3	Q_4
1.																					
2.																					
3.																					
4.																					
5.																					
6.																					
7.																					
8.																					
.																					
.																					
.																					
.																					
.																					
511.																					

All descriptive statistical measures for each variable were computed which helped in making a detailed study of raw-score distributions and their relationships. A brief description of the statistical measures and techniques used has been presented below:

(i) MEAN

Arithmetic Mean or Mean was the value obtained by adding together all the scores and by dividing this sum by the number of scores. That is

$$M = \frac{\sum X}{N}$$

Where;

M = Arithmetic Mean

$\sum X$ =Sum of Individual scores

N = Number of scores (Persons)

(Garrett, H.E and Woodworth, R.S, 1881, P-27)

(ii) STANDARD DEVIATION (SD)

It is also known as 'Root Mean Square Deviation' because it is the square root of the mean of the squared deviations of individual scores from the arithmetic mean. It is denoted by the Greek letter 'σ'. It measures the absolute dispersion or variability of a distribution. The greater the amount of variability the greater the value of SD, the greater will be the magnitude of deviation of the values from their mean. A small SD means high degree of uniformity of the observations as well as homogeneity of scores. Standard Deviation (S.D) by the following equations:

$$\sigma = \sqrt{\frac{\sum X^2}{N} - \left(\frac{\sum X}{N}\right)^2}$$

Where;

σ = Standard Deviation

X = Raw scores

N =Number of scores in the distribution

(Garrett, H.E and Woodworth, R.S, 1881, P-27)

(iii) t-TEST

It is used to test the significance of difference between two means based on different samples. It involves the computation of the ratio between experimental variance (observed difference between two sample means) and error variance (standard error of the mean difference).

$$t = \frac{M_1 - M_2}{\sqrt{\frac{{\sigma_1}^2}{N_1} + \frac{{\sigma_2}^2}{N_2}}}$$

Where;

t = t-Test Value

M_1 = Mean of the I group

M_2 = Mean of the II group

σ_1 = Standard Deviation of I group

σ_2 = Standard Deviation of II group

N_1, N_2 = Number of cases in I and II group

(Guildford J. P., 1950, P-157)

(iv) ANALYSIS OF VARIANCE (ANOVA)

This method was first given by R. A. Fisher. Analysis of variance is a class of statistical techniques through which the overall difference among two or more sample means is studied and its significance is tested. ANOVA is of two types – Simple ANOVA and Complex ANOVA. In the present study the investigator used Complex ANOVA. Complex ANOVA/Two Way ANOVA – In Complex ANOVA there are two or more independent variables which are used to form the basis of classification of groups.

Such ANOVA is suited to factorial design. Statistically, the ANOVA results in an F-ratio which is further interpreted:

$$F = \frac{{\sigma_1}^2}{{\sigma_2}^2}$$

Where;

F = F ratio

σ_1^2 = Larger variance/between groups variance

σ_2^2 = Smaller variance/within groups variance

Between groups variance refers to variation among the means of each group from the total or grand mean of all groups. Within groups variance refers to the average variability of scores within each group (*Singh A.K. (1997), p-441*).

The whole analysis was done on computer by using SPSS package. The details of data analysis are presented in the following chapter along with their graphical representation and interpretation.

Chapter 4

ANALYSIS AND INTERPRETATION OF DATA

The method and procedure adopted for the collection and analysis of data relevant for achieving the objectives and verification of the hypotheses of this study have been described in the previous chapter. Here, in this chapter, the analysed data along with their interpretation have been presented. In order to facilitate presentation and bring brevity in interpretation, the entire analysis has been presented in respect of all the five variables, according to the sequence of statement of objectives under the following headings:

4.1 Study of Score-Distributions: Face-to-Face Mode

(i) Personality Factors
(ii) Intelligence
(iii) Professional Attitude
(iv) Socio-economic Background
(v) Academic Background

4.2 Study of Score-Distributions: Distance Education Mode

(i) Personality Factors
(ii) Intelligence
(iii) Professional Attitude
(iv) Socio-economic Background
(v) Academic Background

4.3 Comparing the Groups: Face-to-Face and Distance Mode

(i) Personality Factors
(ii) Intelligence
(iii) Professional Attitude
(iv) Socio-economic Background
(v) Academic Background

4.4 Study of Gender Differences on:

(i) Personality Factors

(ii) Intelligence

(iii) Professional Attitude

(iv) Socio-economic Background

(v) Academic Background

4.5 Study of Interaction Effect of Training Mode, Gender and Marital Status on:

(i) Personality Factors

(ii) Intelligence

(iii) Professional Attitude

(iv) Socio-economic Background

(v) Academic Background

4.1 Study of Score-Distributions: Face-to-Face Mode

The first objective of this study was concerned with the study of personality factors, general intelligence, professional attitude, socio-economic and academic background of teacher trainees under Face-to-Face mode. In order to achieve this objective, statistical measures such as mean, standard deviation, median and standard error of mean were computed for scores on all these variables. The detailed results are presented in the following sections.

4.1.1 Personality Factors

The Table 4.1 presents the descriptive statistics in respect of 16 personality factors of teacher trainees under face-to-face mode. According to the manual of 16 PF scale, the sten score range (1-3) indicates low score direction and sten-score range (8-10) indicates high score direction on every factor of 16 PF scale. The mean score of face-to-face teacher trainees on factor A (Cool vs. Warm) is 4.31 which falls between two extreme levels. It may be stated that on this factor, the group of trainees under face-to-face mode does not fall in the extreme ranges and this group as a whole is neither very warm nor very cool.

Table 4.1: Summary Statistics for Personality Factors of Face-to-Face Trainees

Cattell's 16PF Factors (N=259)	Mean	Standard Deviation	Median	Standard Error of Mean
A (Cool vs. Warm)	4.31	1.78	4.0	0.11
B(Concrete thinking vs. Abstract thinking)	4.64	2.12	4.0	0.14
C(Affected by feeling vs. Emotionally Stable)	4.90	1.75	5.0	0.11
E(Submissive vs. Dominant)	5.14	1.67	5.0	0.10
F(Sober vs. Enthusiastic)	3.47	1.56	3.0	0.09
G(Expedient vs. Conscientious)	5.90	1.61	6.0	0.10
H(Shy vs. Bold)	5.18	1.48	5.0	0.09
I(Tough-minded vs. Tender Minded)	3.84	2.23	4.0	0.14
L(Trusting vs. Suspicious)	4.11	2.35	4.0	0.14
M(Practical vs. Imaginative)	3.98	2.73	3.0	0.17
N(Forthright vs. Shrewd)	6.15	2.21	6.0	0.14
O(Self-assured vs. Apprehensive)	5.95	1.78	6.0	0.11
Q_1(Conservative vs. Experimenting)	6.30	1.71	6.0	0.11
Q_2(Group oriented vs. Self-sufficient)	5.91	1.68	6.0	0.10
Q_3(Undisciplined Self-conflict vs. Following Self-image)	4.98	1.66	5.0	0.10
Q_4 (Relaxed vs. Tense)	4.94	1.54	5.0	0.09

The mean scores on factor B (Concrete thinking vs. Abstract thinking), factor C (Affected by feelings vs. Emotionally stable) and factor E (Submissive vs. Dominant) are 4.64, 4.90 and 5.14 respectively. All the three mean values are between the two extreme ranges. Thus, it may be concluded that face-to-face teacher trainees are average on concrete/abstract thinking. They are neither very submissive and affected by feelings nor very dominant and emotionally stable.

The mean scores on factors F (Sober vs. Enthusiastic), G (Expedient vs. Conscientious), H (Shy vs. Bold) and I (Tough-minded vs. Tender minded) are 3.47, 5.90, 5.18 and 3.84 respectively. The mean scores on factors F and I are not exactly in the extreme range (1-3) but they are near to this range. It can be interpreted that face-to-face teacher trainees are sober and tough-minded. But, they have average scores on factors G and H which implies that they are neither very expedient and shy nor very conscientious and bold.

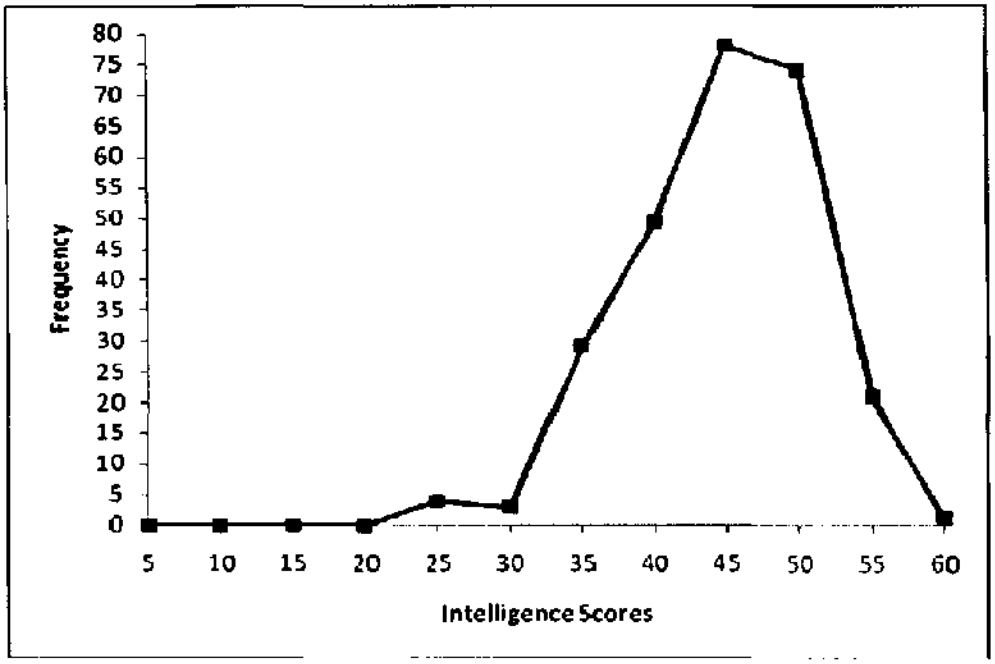
The mean values of teacher trainees on factor L (Trusting vs. Suspicious), factor M (Practical vs. Imaginative), factor N (Forthright vs. Shrewd) and factor O (Self-assured vs. Apprehensive) are 4.11, 3.98, 6.15 and 5.95 respectively. All the four mean values fall between two extreme ranges. It may be stated that the face-to-face teacher trainees are neither very trusting, practical, forthright and self-assured nor very suspicious, imaginative, shrewd and apprehensive.

The mean values on factors Q_1, Q_2, Q_3 and Q_4 fall between the two extreme ranges. Therefore, it may be stated that face-to-face teacher trainees acquire mid position on all these factors. They are neither very conservative, group-oriented, tranquil and careless of social rules nor very experimenting, self-sufficient, tense and socially precise.

Table 4.2: Summary Statistics on General Intelligence, Professional Attitude, Socio-Economic and Academic Background of Face-to-Face Trainees

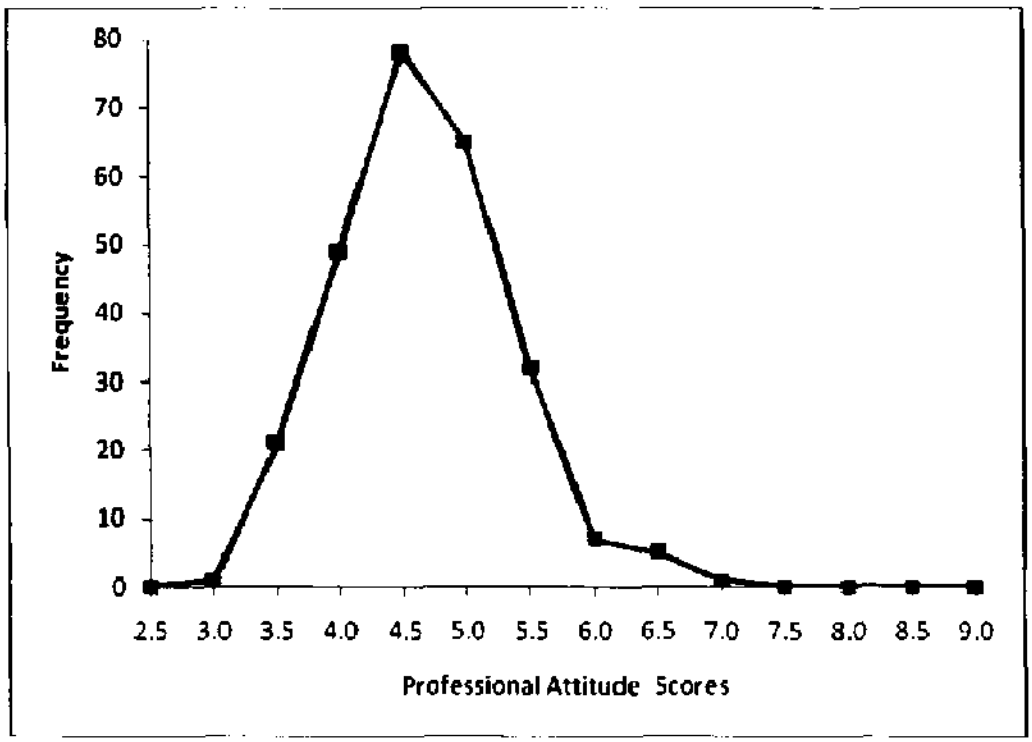
Variables	Mean	Standard Deviation	Median	Standard Error of Mean	Range of Scores
General Intelligence	42.65	6.42	43.0	0.39	24 – 58
Professional Attitude	4.42	0.67	4.42	0.42	2.78 – 6.58
Socio-Economic Background	16.93	6.38	17.0	0.40	6 – 36
Academic background	9.04	1.78	9.0	0.11	5 – 12

Fig. 1: Graph showing the distribution of teacher trainees under Face-to-face mode on General Intelligence



The table 4.2 presents the scores obtained by 259 teacher trainees under face-to-face mode on general intelligence. The mean score on general intelligence was 42.65 with standard deviation of 6.42 and standard error of mean of 0.39. The range of intelligence scores was 24-58. It can be seen from the fig. 1 that the score distribution is negatively skewed which means that the majority of scores lie on positive side. Thus, it can be concluded that the majority of teacher trainees under face-to-face mode have high (above average) intelligence level.

Fig. 2: Graph showing the distribution of teacher trainees under Face-to-face mode on Professional Attitude

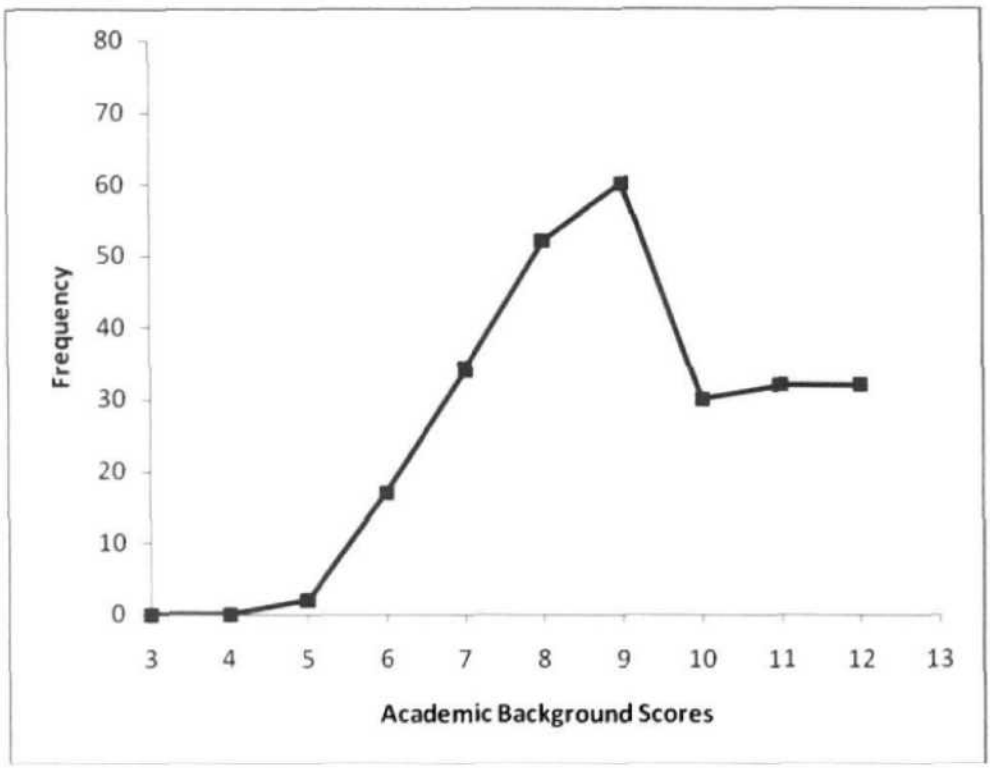


Mean, standard deviation, median and standard error of mean on professional attitude scores of teacher trainees under face-to-face mode are presented in Table 4.2. The professional attitude scores range between 2.78-6.58. It can be observed from the graph that the distribution is positively skewed. It can be interpreted that the majority of face-to-face teacher trainees scored on the lower side of professional attitude scale. *It is to be noted that in this teaching attitude scale by J.C.Goyal, a lower score indicates a favourable attitude whereas a higher score indicates an unfavourable attitude of a subject.* Thus, it can be concluded that face-to-face teacher trainees have favourable attitude towards teaching profession, meaning thereby that face-to-face teacher education course develops a favourable professional attitude among teacher trainees.

Fig. 3: Graph showing the distribution of teacher trainees under Face-to-face mode on Socio-Economic Background.

The statistical results of 259 teacher trainees under face-to-face mode on socio-economic background are presented in Table 4.2. The fig. 3 shows the distribution of scores on socio-economic background with mean 16.93 and standard deviation 6.38. The lowest and highest score on socio-economic background were 6 and 36 respectively. The graph is positively skewed which implies that the majority of teacher trainees under this mode scored on lower side of socio-economic background scale. Therefore, it can be concluded that the majority of teacher trainees under face-to-face mode mostly came from lower socio-economic background.

Fig. 4: Graph showing the distribution of teacher trainees under Face-to-face mode on Academic Background.



It can be seen from Table 4.2 that the mean, standard deviation and standard error of mean on academic background of teacher trainees under face-to-face mode are 9.04, 1.78 and 0.11 respectively. These scores range between 5-12 respectively. The distribution of academic background scores is negatively skewed (fig. 4). It can be interpreted that the majority of teacher trainees under face-to-face mode came from higher (above average) academic background, meaning thereby that face-to-face mode attracts trainees with superior academic background.

4.2 Study of Score-Distributions: Distance mode trainees

The second objective of this study was concerned with the study of personality factors, general intelligence, professional attitude, socio-economic and academic background of teacher trainees under DE mode. In order to achieve this objective, mean, standard deviation, median and standard error of mean were computed for personality factors, general intelligence, professional attitude, socio-economic and academic background of teacher trainees.

4.2.1 Personality Factors

The descriptive statistics in respect of personality factors of teacher trainees under distance mode are given in table 4.3.

Table 4.3: Summary Statistics for Personality Factors of Distance Teacher Trainees

Cattell's 16PF Factors (N=252)	Mean	Standard Deviation	Median	Standard Error of Mean
A (Cool vs. Warm)	4.97	1.61	5.0	0.10
B(Concrete thinking vs. Abstract thinking)	4.15	2.03	4.0	0.12
C(Affected by feeling vs. Emotionally Stable)	3.98	1.59	4.0	0.11
E(Submissive vs. Dominant)	4.71	1.74	5.0	0.12
F(Sober vs. Enthusiastic)	4.29	1.92	4.0	0.12
G(Expedient vs. Conscientious)	4.07	1.96	4.0	0.12
H(Shy vs. Bold)	5.39	1.55	5.0	0.09
I(Tough-minded vs. Tender Minded)	4.96	1.99	5.0	0.12
L(Trusting vs. Suspicious)	5.70	1.76	6.0	0.11
M(Practical vs. Imaginative)	4.76	1.69	5.0	0.10
N(Forthright vs. Shrewd)	4.79	1.85	5.0	0.12
O(Self-assured vs. Apprehensive)	5.04	1.95	5.0	0.12
Q_1(Conservative vs. Experimenting)	5.44	1.95	5.0	0.12
Q_2(Group oriented vs. Self-sufficient)	4.97	1.63	5.0	0.10
Q_3(Undisciplined Self-conflict vs. Following Self-image)	4.26	1.92	4.0	0.12
Q_4 (Relaxed vs. Tense)	5.36	1.88	5.0	0.12

As given in the table 4.3, the mean score of DE mode teacher trainees on factor A (Cool vs. Warm) is 4.97 which falls between two extreme levels. It may be stated that

on this factor, the group of trainees under DE mode does not fall in the extreme ranges. Therefore, it can be stated that this group as a whole is neither very warm nor very cool.

The mean scores on factor B (Concrete thinking vs. Abstract thinking), factor C (Affected by feelings vs. Emotionally stable) and factor E (Submissive vs. Dominant) are 4.15, 3.98 and 4.71 respectively. All the three mean values are between the two extreme ranges. Thus, it may be concluded that DE teacher trainees are average on concrete/abstract thinking. They are neither very submissive and affected by feelings nor very dominant and emotionally stable.

The mean scores on factors F (Sober vs. Enthusiastic), G (Expedient vs. Conscientious), H (Shy vs. Bold) and I (Tough-minded vs. Tender minded) of distance teacher trainees are 4.29, 4.07, 5.39 and 4.96 respectively. It may be noted that these mean values do not fall in the extreme ranges. Therefore, it may be concluded that they have average scores on these factors which implies that they are neither very sober, expedient, shy and tough-minded nor very enthusiastic, conscientious, bold and tender- minded.

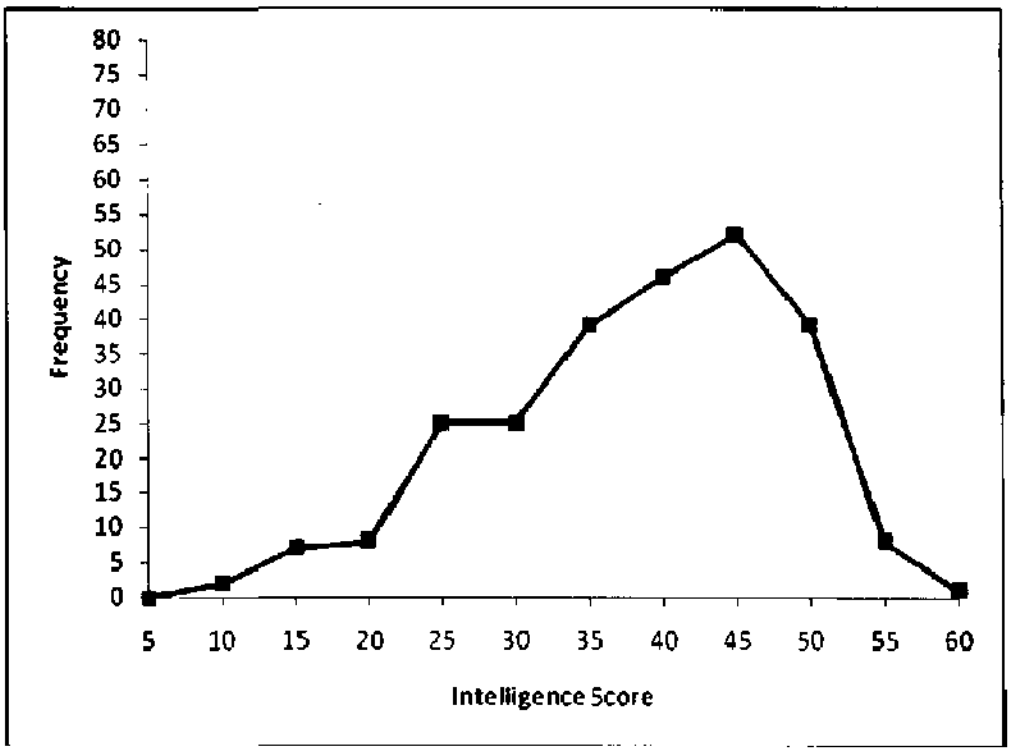
The mean values of teacher trainees on factor L (Trusting vs. Suspicious), factor M (Practical vs. Imaginative), factor N (Forthright vs. Shrewd) and factor O (Self-assured vs. Apprehensive) are 5.70, 4.76, 4.79 and 5.04 respectively. All the four mean values fall between two extreme ranges. It may be stated that the face-to-face teacher trainees are neither very trusting, practical, forthright and self-assured nor very suspicious, imaginative, shrewd and apprehensive.

The mean values on factors Q_1, Q_2, Q_3 and Q_4 fall between the two extreme ranges. Therefore, it may be stated that distance teacher trainees acquire mid position on all these factors. They are neither very conservative, group-oriented, tranquil and careless of social rules nor very experimenting, self-sufficient, tense and socially precise.

Table 4.4: Summary Statistics of General Intelligence, Professional Attitude, Socio-Economic and Academic Background of Distance Teacher Trainees

Variables	Mean	Standard Deviation	Median	Standard Error of Mean	Range of Scores
General Intelligence	36.20	9.89	38.0	0.62	9 - 57
Professional Attitude	4.61	0.89	4.57	0.05	2.75 -8.19
Socio-Economic Background	19.30	6.33	19.0	0.39	7 – 35
Academic background	7.91	1.86	8.0	0.12	4 - 12

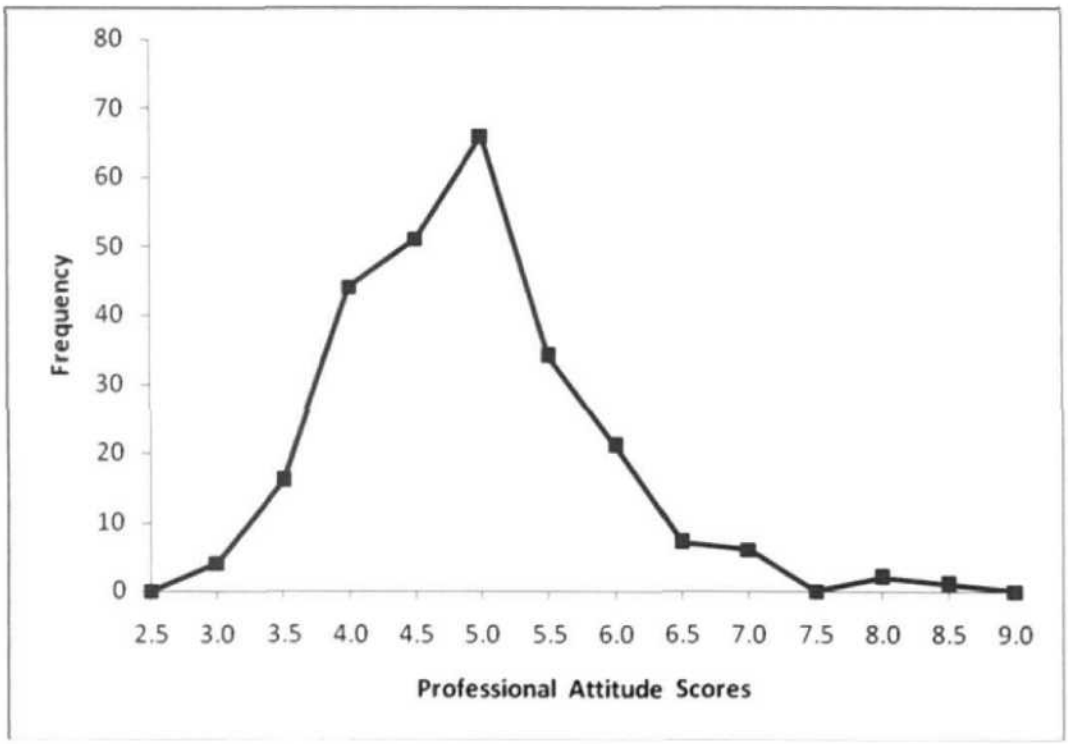
Fig. 5: Graph showing the distribution of teacher trainees under Distance mode on General Intelligence



The statistical results of 252 teacher trainees under distance mode on general intelligence are presented in table 4.4. The fig. 5 shows the distribution of intelligence scores with mean 36.20 and standard deviation 9.89. The lowest and highest score on

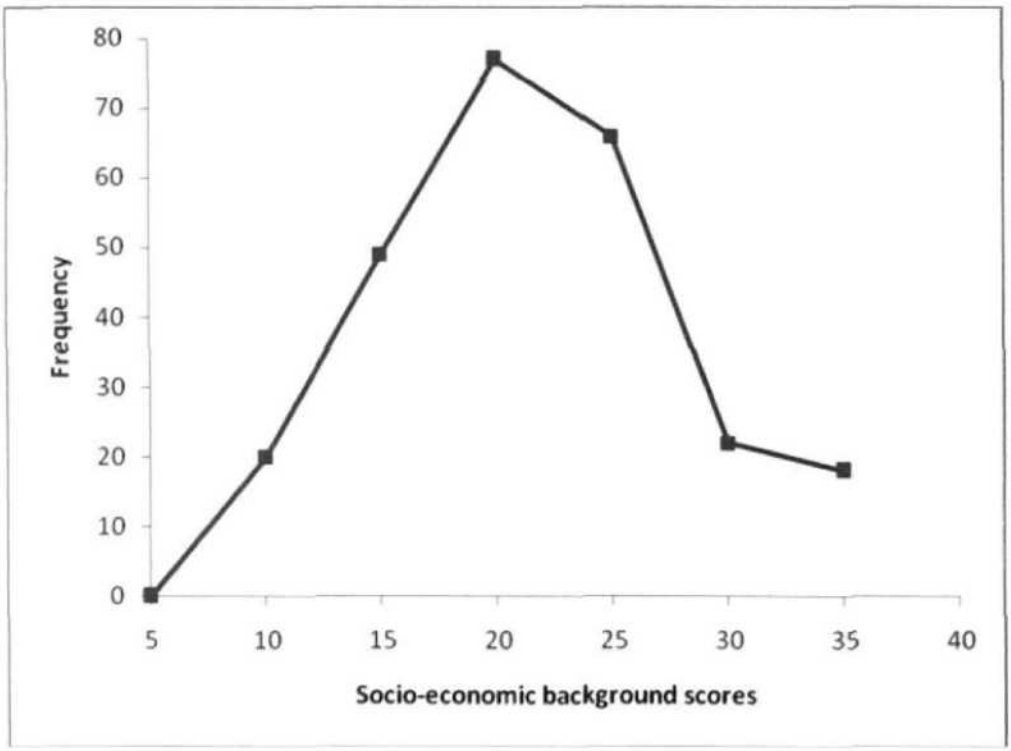
general intelligence were 9 and 57 respectively. The graph is negatively skewed which implies that the majority of teacher trainees under this mode scored on higher side of intelligence scores. Therefore, it can be concluded that the majority of teacher trainees under DE mode have higher (above average) intelligence level.

Fig. 6: Graph showing the distribution of teacher trainees under Distance mode on Professional Attitude



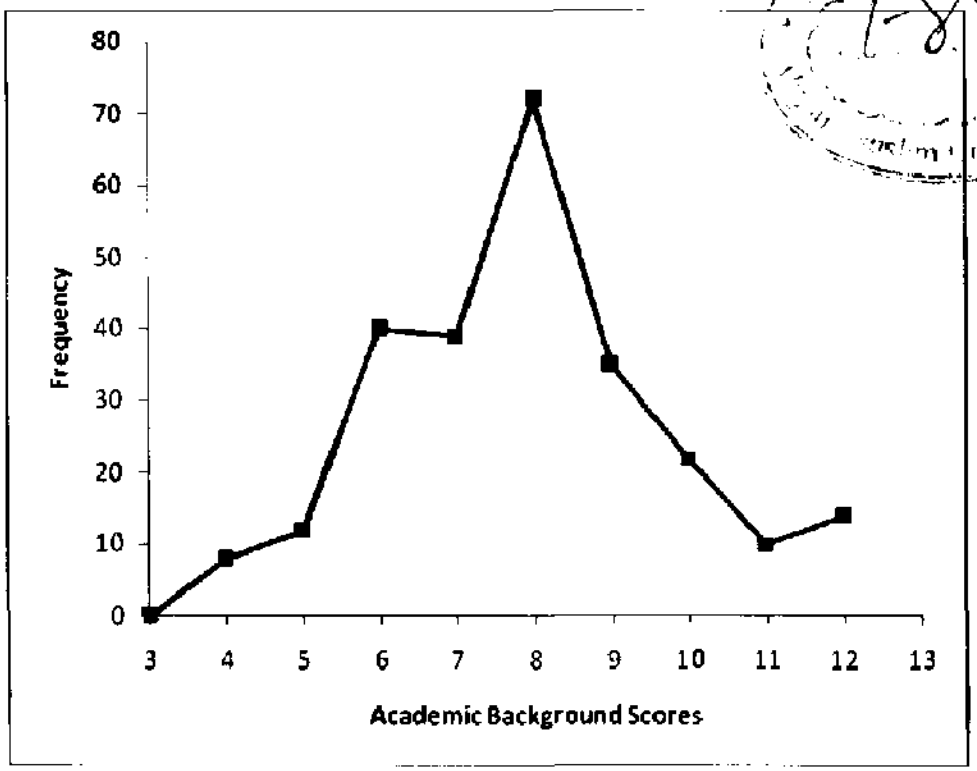
Mean, standard deviation, median and standard error of mean on professional attitude of teacher trainees under distance mode are presented in Table 4.4. The professional attitude scores range between 2.75-8.19. It can be observed from the graph that the distribution is positively skewed. It can be interpreted that the majority of distance teacher trainees scored on the lower side of professional attitude scale which indicate a higher level of professional attitude. Thus, it can be concluded that these teacher trainees also have favourable attitude towards teaching profession.

Fig.7: Graph showing the scores of teacher trainees under Distance mode on Socio-economic Background



The statistical results of 252 teacher trainees under distance mode on socio-economic background are also presented in Table 4.4. The fig. 7 shows the distribution of socio-economic background with mean 19.30 and standard deviation 6.33. The lowest and highest scores on socio-economic background were 7 and 35 respectively. The graph is positively skewed which implies that the majority of teacher trainees under this mode scored on lower side of socio-economic background. Therefore, it can be concluded that the majority of teacher trainees under distance mode also came from lower socio-economic background.

Fig. 8: Graph showing the distribution of teacher trainees under Distance mode on Academic Background



It can be seen from Table 4.4 that the mean, standard deviation and standard error of mean on academic background of teacher trainees under distance mode are 7.91, 1.86 and 0.12 respectively. These scores range between 4-12 respectively. The distribution of academic background scores is positively skewed (fig. 8). It can be interpreted that the majority of teacher trainees under distance mode came from lower academic background.

4.3 Comparing the groups: Face-to-Face and Distance mode

The third objective of this study was concerned with the comparison of teacher trainees under two modes of training with respect to personality factors, general intelligence, professional attitude, socio-economic and academic background. In order to achieve this objective, mean scores on all the above variables were compared using't'-test along with their graphical representation.

4.3.1 Comparison on personality factors

Students of two modes of teacher education were compared on the personality factors of Cattell's 16 PF scale using't'-test. According to the manual of the 16 PF scale sten

scores (1-3) indicate low score direction on each of the sixteen factors and sten scores (8-10) indicate high score direction. The sten scores in between (4-7) indicate the middle group, somewhere between the two extremes. Comparison has to be made for each factor of the 16 PF scale, therefore, following sixteen sub- hypotheses (HO) were tested separately for each factor.

(i) HO 1.1-There is no significant difference on the personality factor A (Cool vs. Warm) between teacher trainees under face-to-face and distance mode.

(ii) HO 1.2-There is no significant difference on the personality factor B (Concrete-thinking vs. Abstract thinking) between teacher trainees under face-to-face and distance mode

(iii) HO 1.3-There is no significant difference on the personality factor C (Affected by Feelings vs. Emotionally stable) between teacher trainees under face-to-face and distance mode.

(iv) HO 1.4-There is no significant difference on the personality factor E (Submissive vs. Dominant) between teacher trainees under face-to-face and distance mode.

(v) HO 1.5-There is no significant difference on the personality factor F (Sober vs. Enthusiastic) between teacher trainees under face-to-face and distance mode.

(vi) HO 1.6-There is no significant difference on the personality factor G (Expedient vs. Conscientious) between teacher trainees under face-to-face and distance mode.

(vii) HO 1.7-There is no significant difference on the personality factor H (Shy vs. Bold) between teacher trainees under face-to-face and distance mode.

(viii) HO 1.8-There is no significant difference on the personality factor I (Tough-minded vs. Tender-minded) between teacher trainees under face-to-face and distance mode.

(ix) HO 1.9-There is no significant difference on the personality factor L (Trusting vs. Suspicious) between teacher trainees under face-to-face and distance mode.

(x) HO 1.10-There is no significant difference on the personality factor M (Practical vs. Imaginative) between teacher trainees under face-to-face and distance mode.

(xi) HO 1.11-There is no significant difference on the personality factor N (Forthright vs. Shrewd) between teacher trainees under face-to-face and distance mode.

(xii) HO 1.12-There is no significant difference on the personality factor O (Self-assured vs. Apprehensive) between teacher trainees under face-to-face and distance mode.

(xiii) HO 1.13-There is no significant difference on the personality factor Q_1 (Conservative vs. Experimenting) between teacher trainees under face-to-face and distance mode.

(xiv) HO 1.14-There is no significant difference on the personality factor Q_2 (Group-oriented vs. Self-sufficient) between teacher trainees under face-to-face and distance mode.

(xv) HO 1.15-There is no significant difference on the personality factor Q_3 (Undisciplined Self-conflict vs. Following Self-image) between teacher trainees under face-to-face and distance mode.

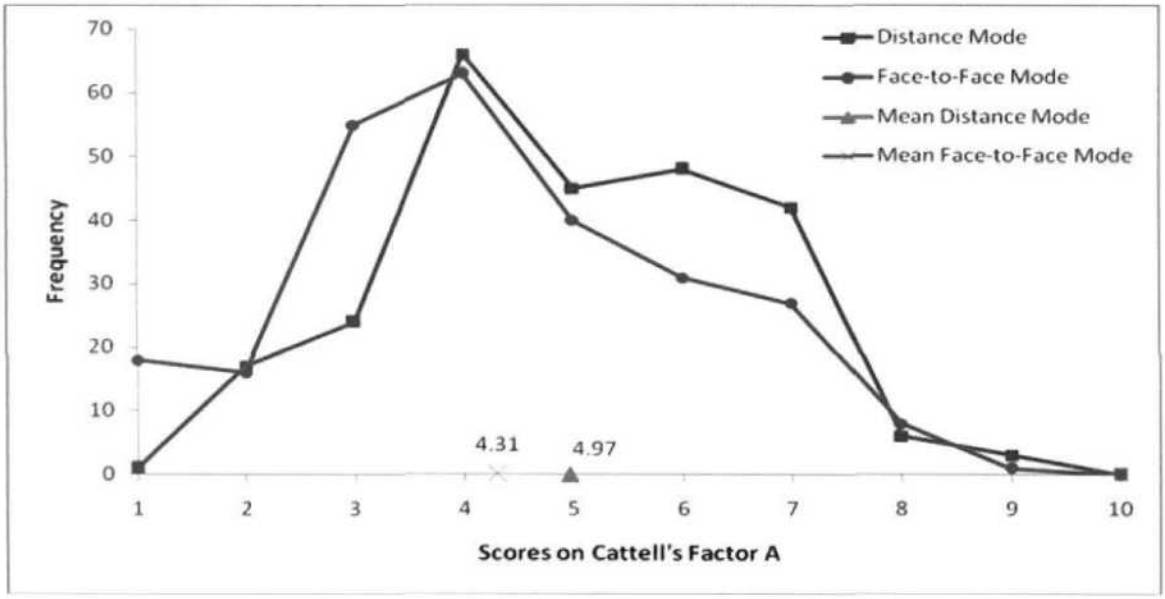
(xvi) HO 1.16-There is no significant difference on the personality factor Q_4 (Relaxed vs. Tense) between teacher trainees under face-to-face and distance mode.

Table 4.5: Comparison on Personality Factor A (Cool vs. Warm)

Mode of education	Number of respondents N	Mean Sten Score	Standard Deviation	Standard error of difference between means	t-value
Face-to-Face mode	259	4.31	1.78	0.15	4.44**
Distance mode	252	4.97	1.61		

** *Significant at 0.01 level*

Fig. 9: Graph showing the distribution of teacher trainees under both the modes of training on factor A (Cool vs. Warm)



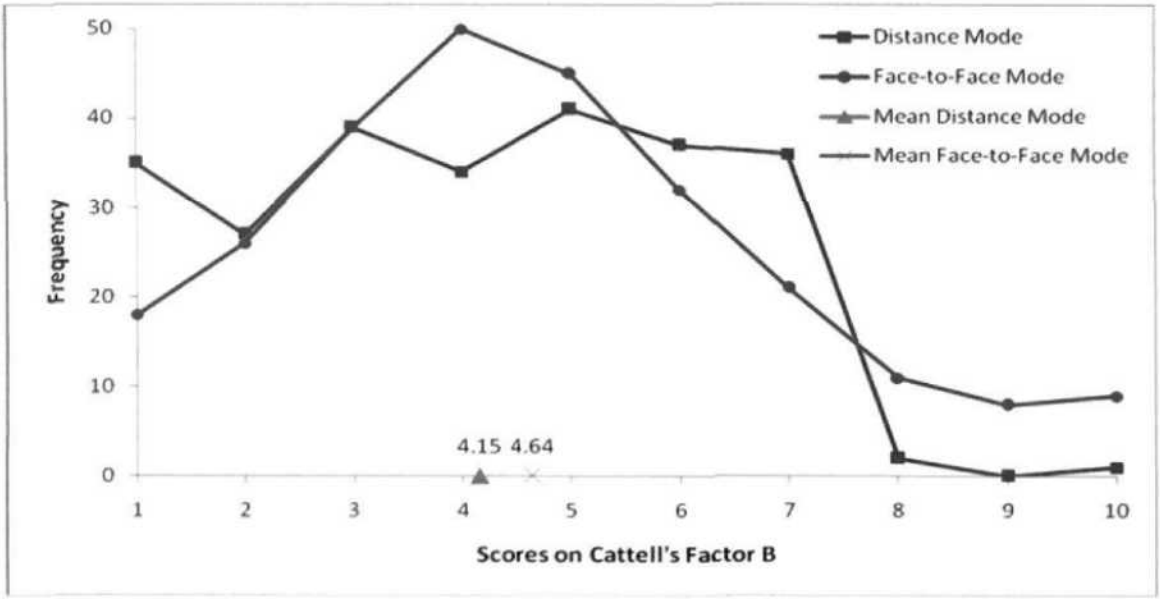
According to the manual of Cattell's 16 PF scale, low sten score (1-3) on Factor A indicates cool, reserved, impersonal and formal behavior of an individual and high sten score (8-10) indicates warm, good-natured and easy-going behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor. This has also been discussed in the previous section. The statistical results such as mean, standard deviation and standard error of mean of both the groups for comparison of means on factor A are given in Table 4.5. The t-ratio obtained for comparison on factor A was 4.44 which was found to be significant at 0.01 level, showing that the two means are significantly different. The fact has also been shown in the adjoining graph. The mean sten score of DE mode teacher trainees (4.97) on factor A is higher than the mean sten score of face-to-face teacher trainees (4.31). This shows that DE mode teacher trainees were more warm, outgoing, good-natured and emotionally expressive than those under face-to-face mode. Thus, the null hypothesis 1.1 stating that there is no significant difference on the personality factor A (Cool vs. Warm) of teacher trainees under face-to-face and distance mode was rejected.

Table 4.6: Comparison on Personality Factor B (Concrete thinking vs. Abstract thinking)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-Face mode	259	4.64	2.12	0.18	2.56**
Distance mode	252	4.15	2.03		

** *Significant at 0.01 level*

Fig.10: Graph showing the distribution of teacher trainees under both the modes of training on factor B (Concrete-thinking vs. Abstract-thinking)



According to the manual, low sten score (1-3) on Factor B indicates concrete thinking and low intelligence behavior of an individual and high sten score (8-10) indicates abstract thinking and high intelligence behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor. Table 4.6 presents the mean, standard deviation, standard error of mean and the corresponding t-value for comparison of the teacher trainees under two modes on factor B. The obtained t-value (2.56) was found to be significant at 0.01 level. It is evident from the adjoining graph that the mean sten score on Factor B of face-to-face mode teacher trainees (4.64) is significantly higher than the mean sten score of teacher trainees under distance mode (4.15). Therefore, the face-to-face teacher trainees were more intelligent than their

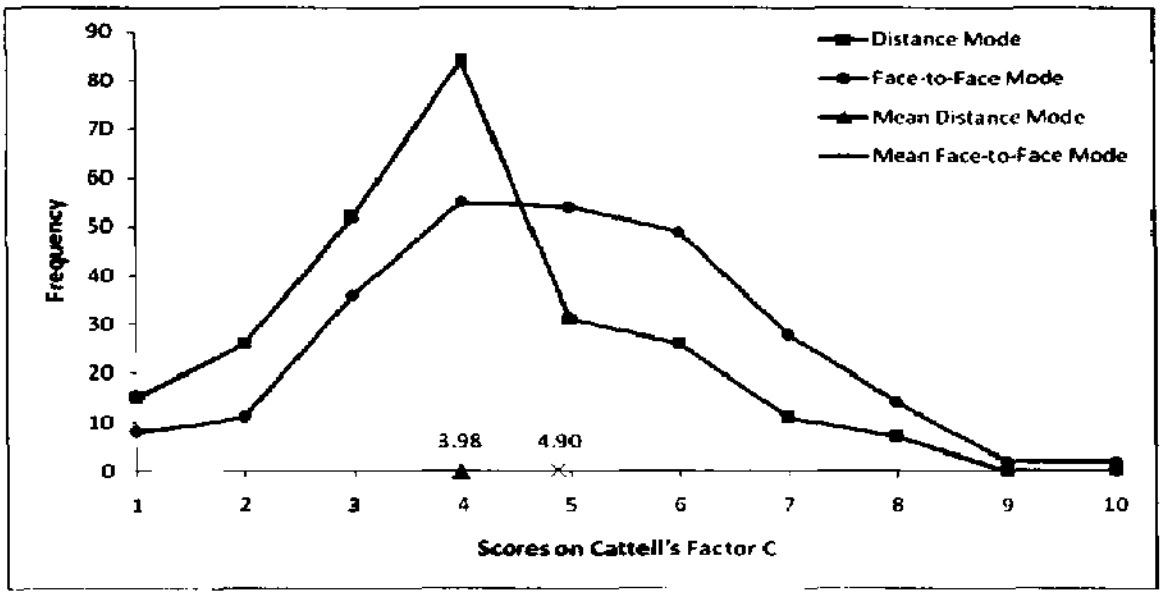
counterparts in the distance mode. The face-to-face trainees were quick to grasp ideas and fast learner as compared to distance trainees. Thus, null hypothesis 1.2 was also rejected as there was a significant difference between the teacher trainees under two modes on factor B.

Table 4.7: Comparison on Personality Factor C (Affected by Feelings vs. Emotionally Stable)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-Face mode	259	4.90	1.75	0.15	6.18**
Distance mode	252	3.98	1.59		

** *Significant at 0.01 level*

Fig. 11: Graph showing the distribution of teacher trainees under both the modes of training on factor C (Affected by Feelings vs. Emotionally Stable)



According to the manual, low sten score (1-3) on factor C indicates emotionally less stable and easily annoyed behavior of an individual and high sten score (8-10) indicates mature and emotionally stable behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor. It is evident from the Table 4.7 that there is a significant difference in teacher trainees of the two modes on Factor C as t-value of 6.18 is significant at 0.01 level. It can be observed from fig. 11 that the

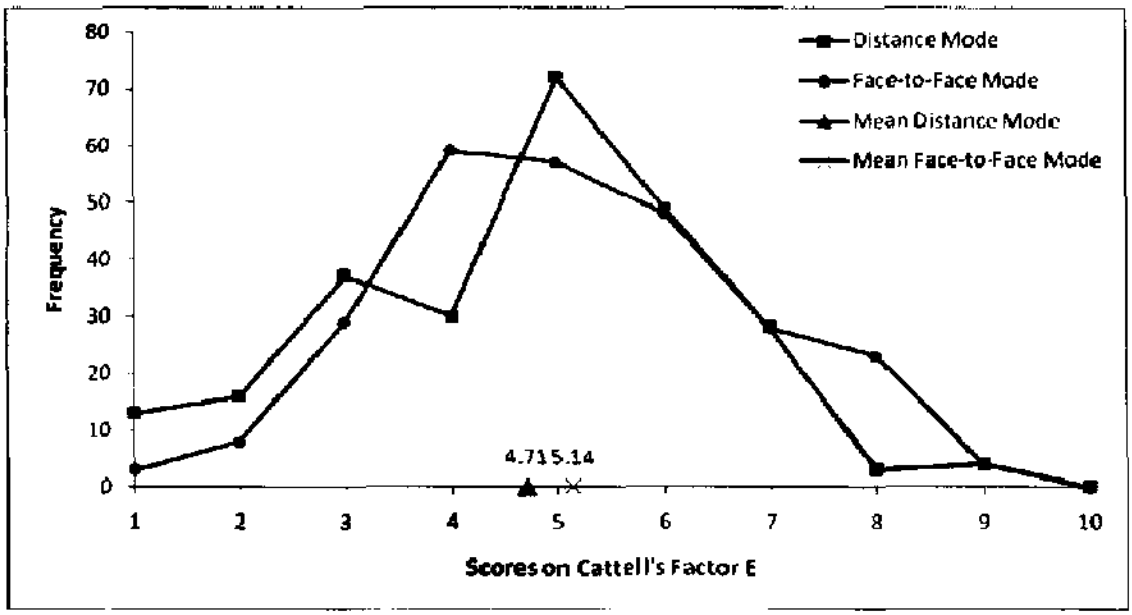
mean sten score on factor C of face-to-face teacher trainees (4.90) is higher than the mean sten score of teacher trainees under distance mode (3.98). The null hypothesis 1.3 was rejected and it led to conclusion that regular teacher trainees were more emotionally stable, mature and realistic about life than the distance teacher trainees.

Table 4.8: Comparison on Personality Factor E (Submissive vs. Dominant)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-Face mode	259	5.14	1.67	0.15	2.87**
Distance mode	252	4.71	1.74		

** *Significant at 0.01 level*

Fig. 12: Graph showing the distribution of teacher trainees under both the modes of training on factor E (Submissive vs. Dominant)



According to the manual, low sten score (1-3) on factor E indicates submissive, humble and mild behavior of an individual and high sten score (8-10) indicates dominant, assertive and aggressive behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes and therefore indicate the medium status on this factor. The mean, standard deviation and standard error of mean of teacher trainees under both the modes on factor E are presented in Table 4.8. The t-ratio for comparison on factor E was 2.87 which was found to be significant at 0.01 level. The mean sten score on factor E of face-to-face

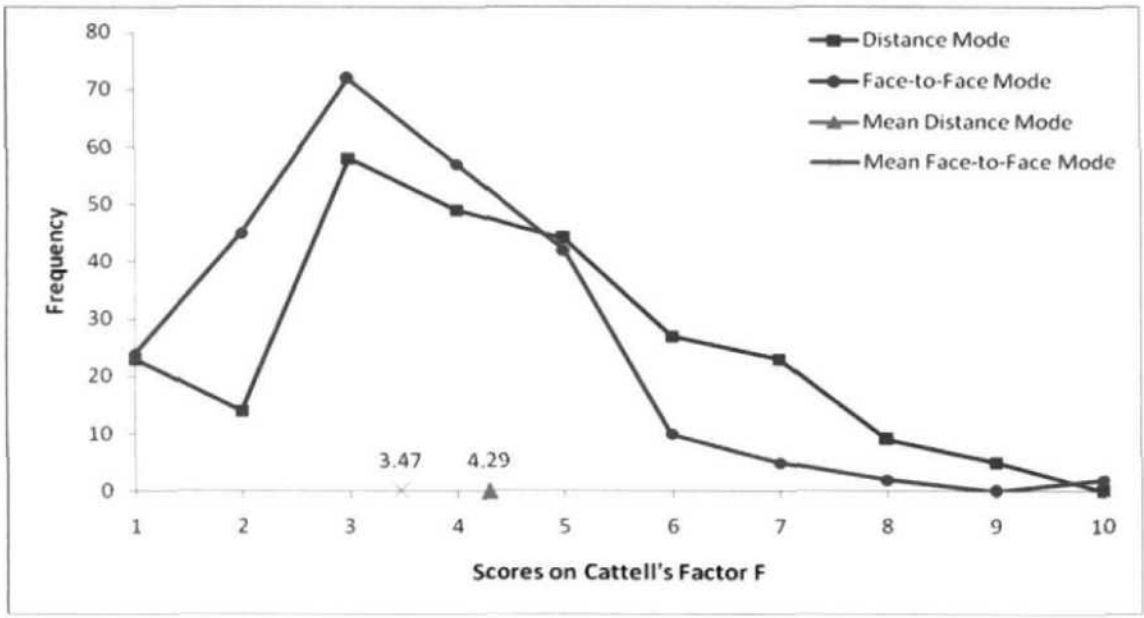
teacher trainees (5.14) was more than the mean sten score of teacher trainees under distance mode (4.71). It is revealed that the teacher trainees under face-to-face mode were more assertive, aggressive and dominant than those under distance mode. The null hypothesis 1.4 was rejected.

Table 4.9: Comparison on Personality Factor F (Sober vs. Enthusiastic)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-Face mode	259	3.47	1.56	0.16	5.29**
Distance mode	252	4.29	1.92		

** *Significant at 0.01 level*

Fig. 13: Graph showing the distribution of teacher trainees under both the modes of training on factor F (Sober vs. Enthusiastic).



According to the manual, low sten score (1-3) on factor F indicates sober and serious behavior of an individual and high sten score (8-10) indicates enthusiastic and spontaneous behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor. The statistical measures of the comparison of teacher trainees under two modes on factor F are given in table 4.9. It can be seen from the Table 4.9 that the t-value (5.29) is significant at 0.01 level. It is also observed from

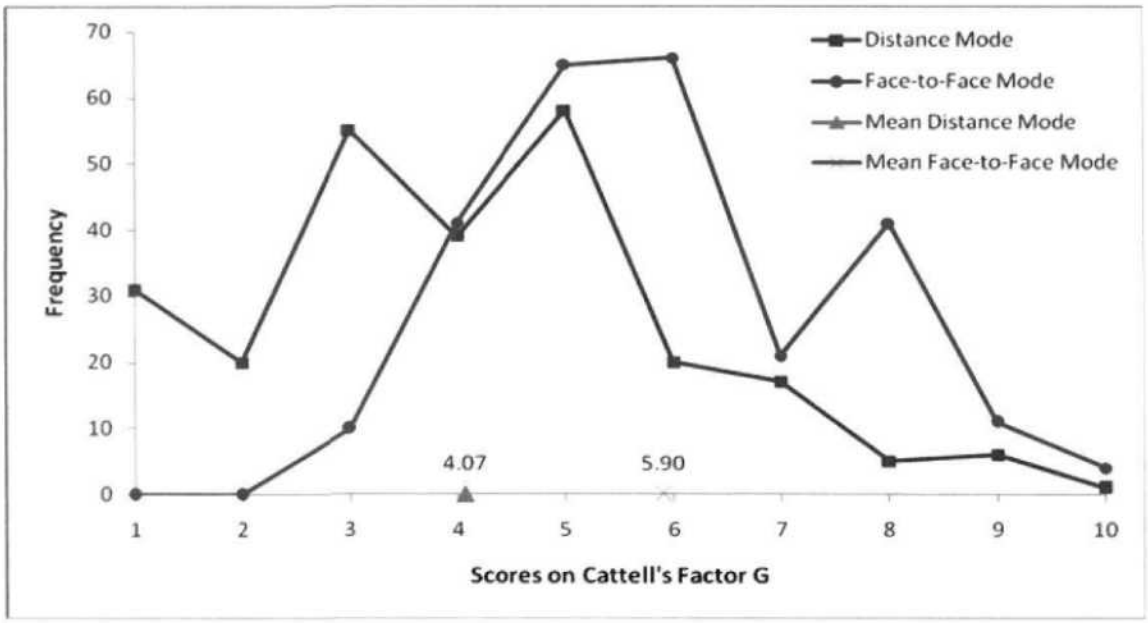
the adjoining graph that the difference between the mean sten score of face-to-face (3.47) and distance mode (4.29) teacher trainees on factor F is significant. Therefore, it can be concluded that distance teacher trainees were more enthusiastic, spontaneous and expressive than teacher trainees under face-to-face mode. Thus, null hypothesis 1.5 was rejected.

Table 4.10: Comparison on Personality Factor G (Expedient vs. Conscientious)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-Face mode	259	5.90	1.61	0.40	11.58**
Distance mode	252	4.07	1.96		

** *Significant at 0.01 level*

Fig. 14: Graph showing the distribution of teacher trainees under both the modes of training on factor G (Expedient vs. Conscientious).



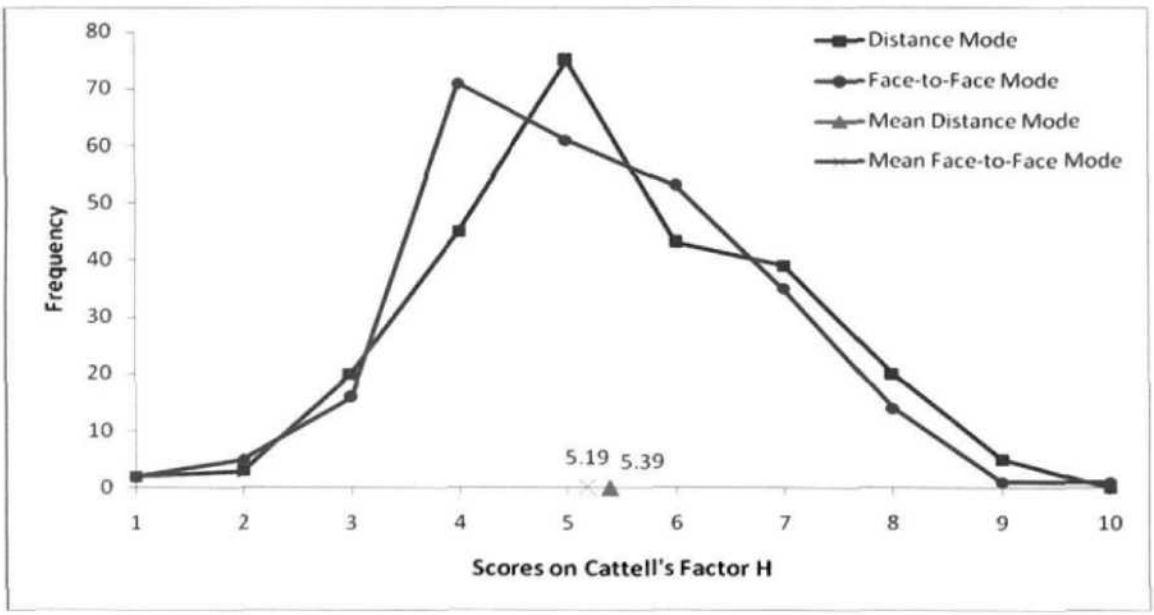
According to the manual, low sten score (1-3) on Factor G indicates expedient and self indulgent behavior of an individual and high sten score (8-10) indicates conscientious behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor. It can be seen from Table 4.10 and Fig. 14 that the mean sten score of face-to-face teacher trainees (5.90) is higher than that of teacher trainees under distance mode (4.07), this difference (t=11.58) is significant at 0.01

level. Therefore, it can be concluded that teacher trainees under face-to-face mode were more moralistic and rule-bound than the distance mode teacher trainees. Thus, the null hypothesis 1.6 stating that there is no significant difference on the personality factor G of teacher trainees under face-to-face and distance mode was rejected.

Table 4.11: Comparison on Personality Factor H (Shy vs. Bold)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-Face mode	259	5.18	1.48	0.13	1.55
Distance mode	252	5.39	1.55		

Fig. 15: Graph showing the distribution of teacher trainees under both the modes of training on factor H (Shy vs. Bold).



According to the manual, low sten score (1-3) on Factor H indicates shy and timid behavior of an individual and high sten score (8-10) indicates bold and venturesome behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor. It can be seen from Table 4.11 that the difference between means is not significant for factor H, as the t-value of 1.55 is not significant. It can be also observed from fig. 15 that the difference between the two means is not significant. Thus, the null hypothesis 1.7 is accepted, that there exists no significant difference in

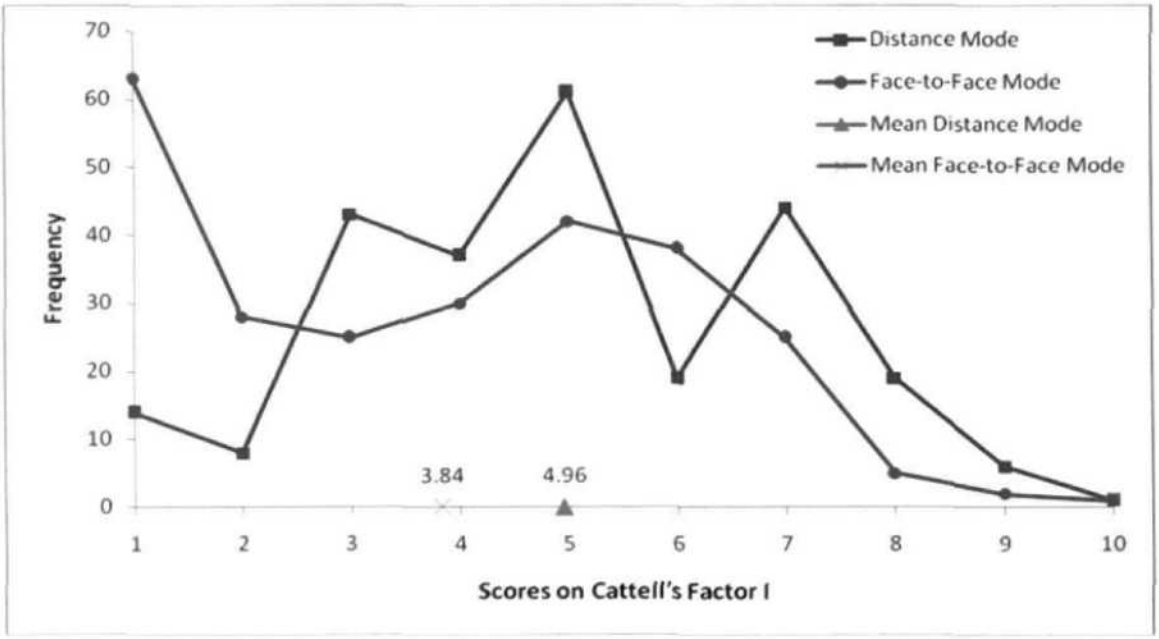
the teacher trainees of both the modes with respect to factor H of Cattell's 16 PF scale. This leads to the conclusion that both the groups are equally shy/bold.

Table 4.12: Comparison on Personality Factor I (Tough-minded vs. Tender-minded)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-Face mode	259	3.84	2.23	0.19	5.98**
Distance mode	252	4.96	1.99		

** *Significant at 0.01 level*

Fig. 16: Graph showing the distribution of teacher trainees under both the modes of training on factor I (Tough-minded vs. Tender-minded).



According to the manual, low sten score (1-3) on Factor I indicates tough-minded and realistic behavior of an individual and high sten score (8-10) indicates tender minded, sensitive and refined behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor .The mean, standard deviation and standard error of mean of teacher trainees under both the modes on factor I are presented in Table 4.12. The t-ratio for comparison on factor I was 5.98 which was found to be significant at 0.01 level. It is also evident from the above graph that there is a significant difference

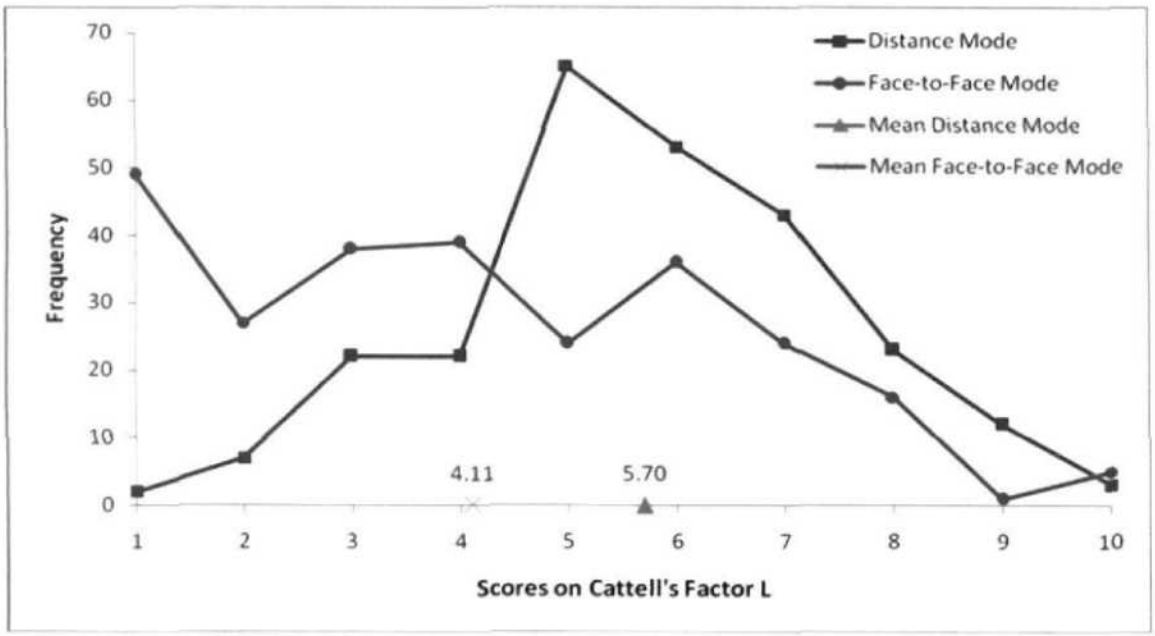
between the teacher trainees of both the modes on factor I of Cattell's 16 PF scale. It implies that distance mode teacher trainees (4.96) were more tender minded, emotionally sensitive and not very realistic than the face-to-face teacher trainees (3.84). The null hypothsis 1.8 was rejected.

Table 4.13: Comparison on Personality Factor L (Trusting vs. Suspicious)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-Face mode	259	4.11	2.35	0.18	8.63**
Distance mode	252	5.70	1.76		

** *Significant at 0.01 level*

Fig. 17: Graph showing the distribution of teacher trainees under both the modes of training on factor L (Trusting vs. Suspicious).



According to the manual, low sten score (1-3) on factor L indicates trusting and uncompetitive behavior of an individual and high sten score (8-10) indicates suspicious and distrustful behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor. The statistical results such as mean, standard deviation and standard error of mean are presented in table 4.13. It can also be seen from Table 4.13 that the t-value (8.63) is significant at 0.01 level. This shows that the difference between the mean sten score of face-to-face (4.11) and distance

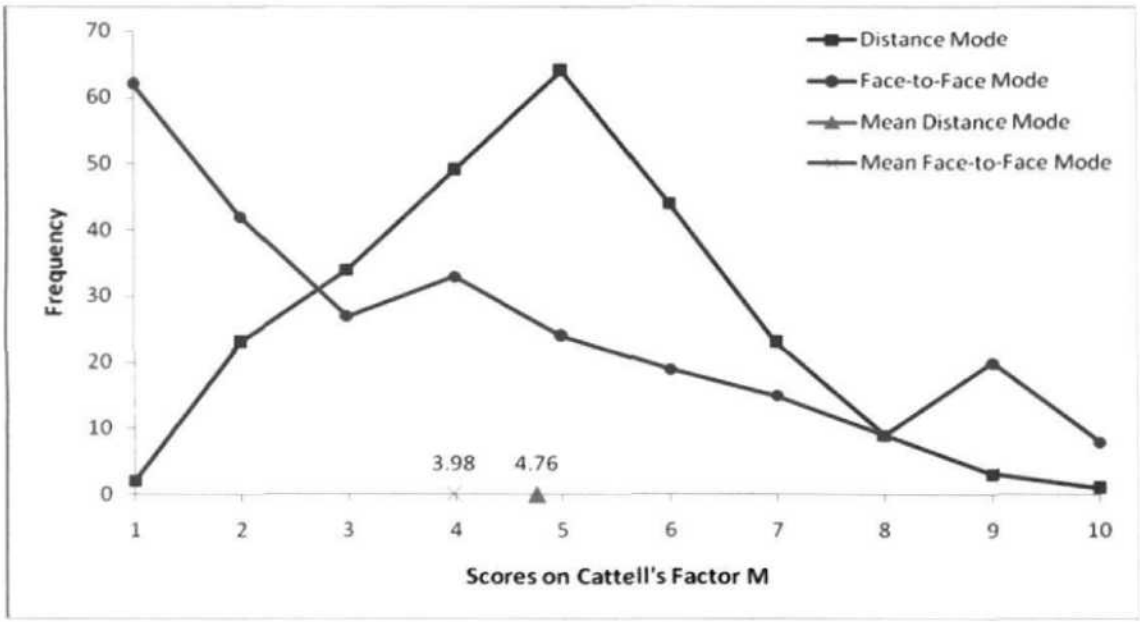
mode (5.70) teacher trainees on factor L was significant, rejecting the null hypothesis 1.9. It means that distance teacher trainees were more suspicious and doubtful than the teacher trainees under face-to-face mode.

Table 4.14: Comparison on Personality Factor M (Practical vs. Imaginative)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-Face mode	259	3.98	2.73	0.19	3.91**
Distance mode	252	4.76	1.69		

** *Significant at 0.01 level*

Fig.18: Graph showing the distribution of teacher trainees under both the modes of training on factor M (Practical vs. Imaginative).



In accordance with the manual, low sten score (1-3) on Factor M indicates practical and steady behavior of an individual and high sten score (8-10) indicates imaginative and impractical behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes and therefore indicate the medium status on this factor .The mean, standard deviation and standard error of mean of teacher trainees under both the modes on factor M are presented in Table 4.14. The't'- value (3.91) for comparing the personality of the B.Ed students in two modes of education, revealed a significant difference on factor M between the two

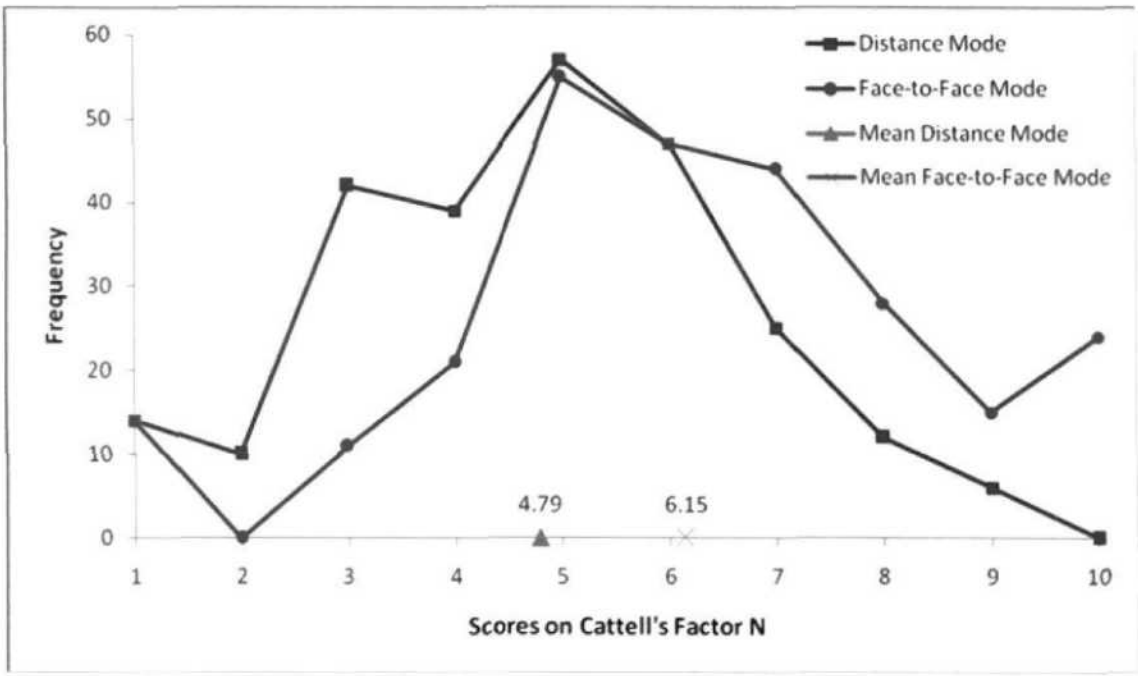
groups of trainees. The adjoining graph also indicates that the mean sten score of distance mode trainees (4.76) is higher than that of face-to-face trainees (3.98), thus indicating that distance trainees were more imaginative and impractical than their regular counterparts. Thus, the null hypothesis 1.10 was rejected.

Table 4.15: Comparison on Personality Factor N (Forthright vs. Shrewd)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-Face mode	259	6.15	2.21	0.18	7.56**
Distance mode	252	4.79	1.85		

*** Significant at 0.01 level*

Fig.19: Graph showing the distribution of teacher trainees under both the modes of training on factor N (Forthright vs. Shrewd).



According to the manual, low sten score (1-3) on Factor N indicates forthright, genuine and artless behavior of an individual and high sten score (8-10) indicates shrewd, polished and diplomatic behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor. It can be seen from the above Table that there is a significant difference (t-value = 7.56) between the teacher trainees of both the modes on factor N. The mean sten score of face-to-face trainees was higher (6.15) than their distance counterparts (4.79), therefore it can be concluded

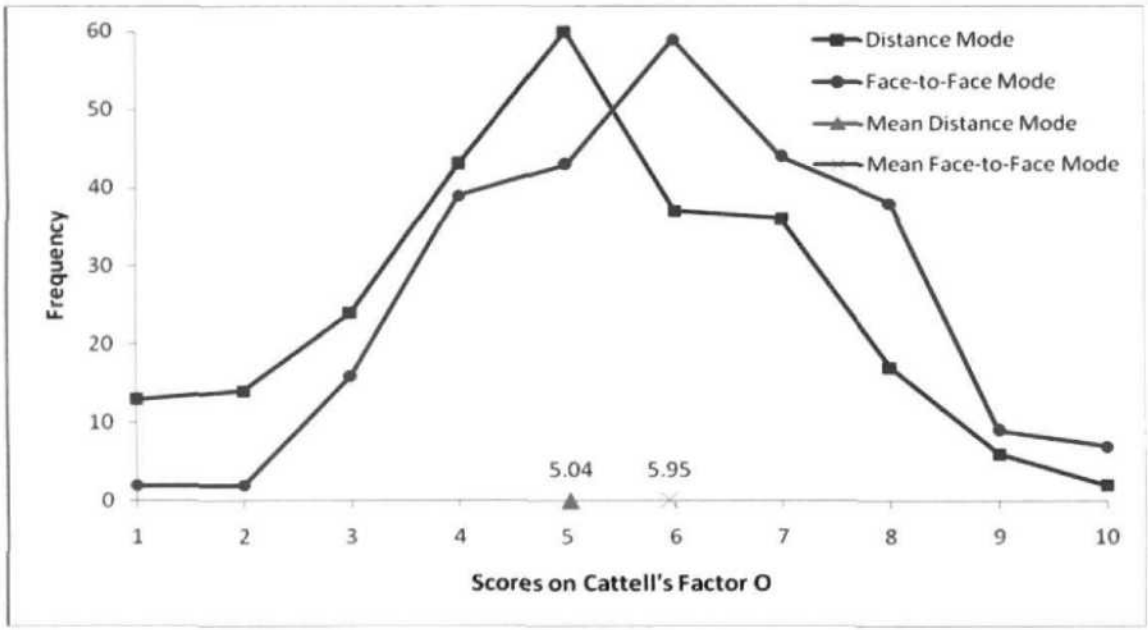
that face-to-face trainees were more shrewd and diplomatic than distance mode trainees. Thus, the null hypothesis 1.11 was rejected stating that there exists no significant difference in the teacher trainees of both the modes with respect to factor N of Cattell's 16 PF scale.

Table 4.16:Comparison on Personality Factor O (Self-Assured vs. Apprehensive)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-face mode	259	5.95	1.78	0.16	5.57**
Distance mode	252	5.04	1.95		

** *Significant at 0.01 level*

Fig.20: Graph showing the distribution of teacher trainees under both the modes of training on factor O (Self-assured vs. Apprehensive).



According to the manual,low sten score (1-3) on Factor O indicates self-assured and self-satisfied behavior of an individual and high sten score (8-10) indicates apprehensive, insecure and worrying behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor . The mean, standard deviation and standard error of mean of teacher trainees under both the modes on factor M are presented in Table 4.16. There was a significant difference between teacher trainees of the two modes on Factor O as t-value (5.57) was found to be significant at 0.01

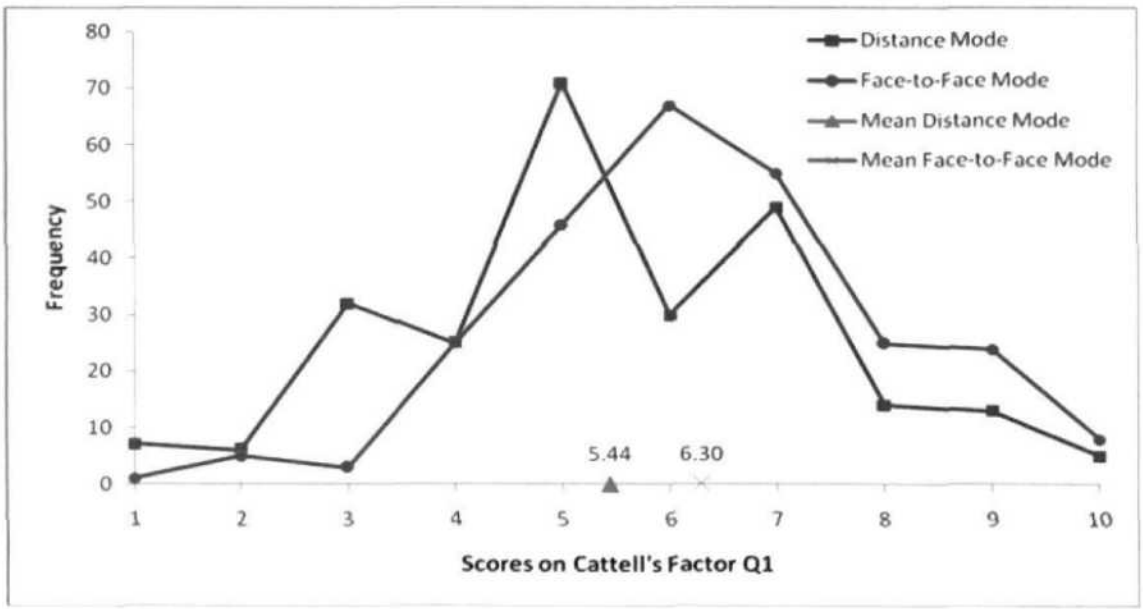
level. The mean sten score on factor O of face-to-face teacher trainees (5.95) was more than the mean sten score of teacher trainees under distance mode (5.04).. The null hypothesis 1.12 was rejected and led to conclusion that regular teacher trainees were more apprehensive, self-blaming and insecure than the distance teacher trainees.

Table 4.17: Comparison on Personality Factor Q_1 (Conservative vs. Experimenting)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-face mode	259	6.30	1.71	0.16	5.31**
Distance mode	252	5.44	1.95		

** *Significant at 0.01 level*

Fig.21: Graph showing the distribution of teacher trainees under both the modes of training on factor Q_1 (Conservative vs. Experimenting).



According to the manual, low sten score (1-3) on factor Q_1 indicates conservative behavior and respect for traditional ideas of an individual and high sten score (8-10) indicates open to change and experimenting behavior but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes and therefore indicate the medium status on this factor .The statistical results such as mean, standard deviation and standard error of mean of both the groups on factor Q_1 are given in Table 4.17. The t-value (5.31) is significant at 0.01 level which

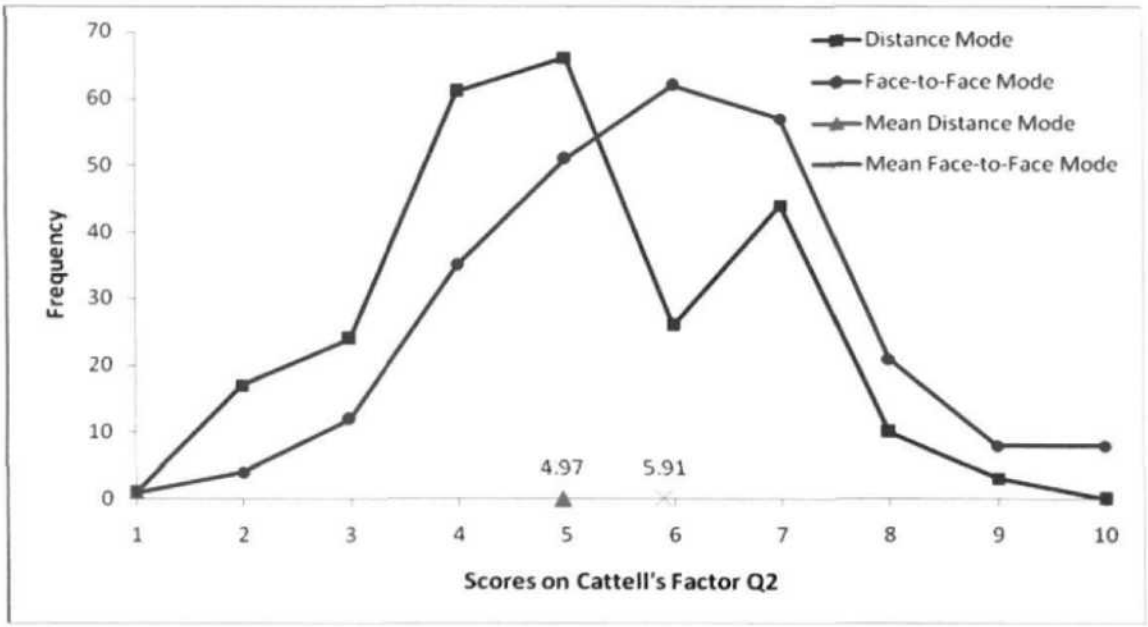
means that the two groups differ significantly on this factor with face-to-face mode trainees having higher mean sten score than those under distance mode. Thus, the difference between the mean sten score of face-to-face (6.30) and distance mode (5.44) teacher trainees on factor Q_1 was significant, which meant that teacher trainees under face-to-face mode were more experimenting and liberal than the distance teacher trainees. Thus the null hypothesis 1.13 was rejected.

Table 4.18: Comparison on Personality Factor Q_2 (Group-oriented vs. Self-sufficient):

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-face mode	259	5.91	1.68	0.14	6.44**
Distance mode	252	4.97	1.63		

** *Significant at 0.01 level*

Fig. 22: Graph showing the distribution of teacher trainees under both the modes of training on factor Q_2 (Group-oriented vs. Self-sufficient).



According to the manual, people who score low sten score (1-3) on Factor Q_2 are group oriented and prefer to work and make decisions with other people and people who score high sten score (8-10) tend to be self sufficient and prefer own decisions but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this

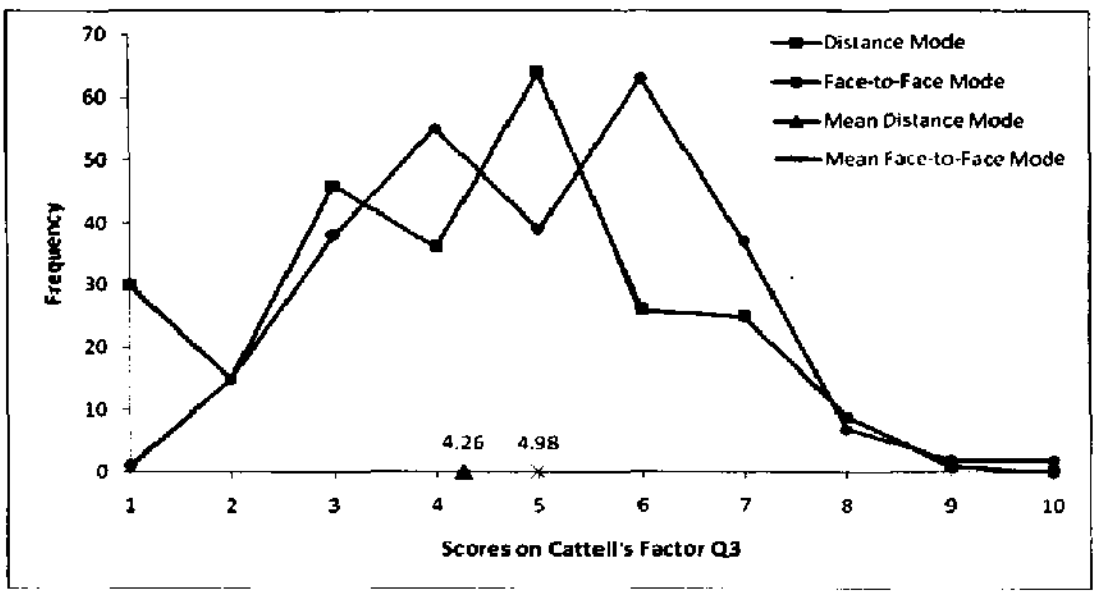
factor. Table 4.18 presents the mean, standard deviation, standard error of mean and the corresponding t-value of the comparison of teacher trainees under two modes on factor Q_2. The obtained t-value (6.44) was found to be significant at 0.01 level. It is also evident from the adjoining graph that the mean sten score on factor Q_2 of face-to-face mode teacher trainees (5.91) is higher than the mean sten score of teacher trainees under distance mode (4.97). Thus, it can be concluded that the teacher trainees under face-to-face mode were more self-sufficient and resourceful than distance mode teacher trainees. Thus, the null hypothesis 1.14 was rejected.

Table 4.19: Comparison on Personality Factor Q_3 (Undisciplined Self-conflict vs. Following Self-image)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-face mode	259	4.98	1.66	0.15	4.56**
Distance mode	252	4.26	1.92		

** *Significant at 0.01 level*

Fig. 23: Graph showing the distribution of teacher trainees under both the modes of training on factor Q_3 (Undisciplined Self-conflict vs. Following Self-image).



According to the manual, people who score low sten score (1-3) on Factor Q_3 are careless of social rules and people who score high sten score (8-10) tend to be socially

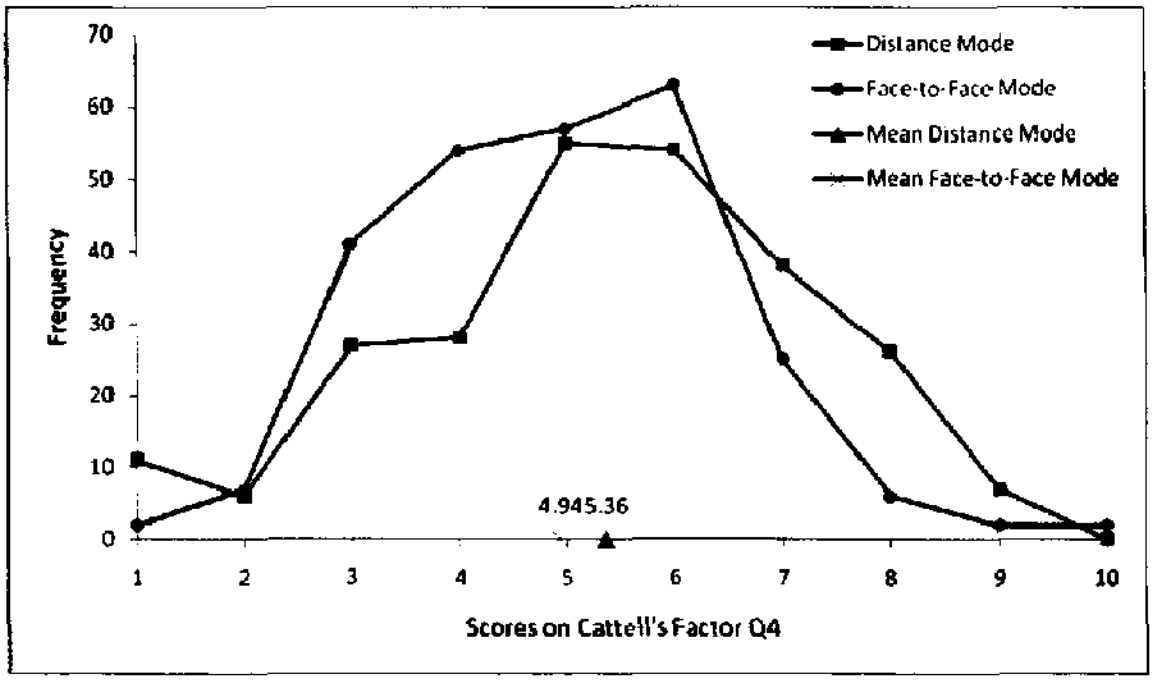
precise and compulsive but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor. The mean, standard deviation and standard error of mean of teacher trainees under both the modes on factor Q_3 are presented in Table 4.19. There was a significant difference between teacher trainees of the two modes on Factor Q_3 as the t-value 4.56 was found to be significant at 0.01 level. It is evident from the above graph that the mean sten score on factor Q_3 of face-to-face mode teacher trainees (4.98) is significantly higher than the mean sten score of teacher trainees under distance mode (4.26). Hence the null hypothesis 1.15 is rejected. Thus, the face-to-face teacher trainees were socially more precise and have stronger control of their emotions than distance teacher trainees.

Table 4.20: Comparison on Personality Factor Q_4 (Relaxed vs. Tense)

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-face mode	259	4.94	1.54	0.15	2.81**
Distance mode	252	5.36	1.88		

** *Significant at 0.01 level*

Fig. 24: Graph showing the distribution of teacher trainees under both the modes of training on factor Q_4 (Relaxed vs. Tense).



According to the manual, people who score low sten score (1-3) on Factor Q_4 are relaxed and unfrustrated and people who score high sten score (8-10) tend to be tense and frustrated but the obtained mean sten scores of face-to-face and distance mode teacher trainees are between these two extremes, and therefore, indicate the medium status on this factor. The Table 4.20 presents the mean, standard deviation, standard error of mean and the corresponding t-value for the comparison of the teacher trainees under two modes on factor Q_4. It can be observed from the above table that there is a significant difference between the teacher trainees of the two modes on Factor Q_4 as the t-ratio is significant at 0.01 level (t-value =2.81). It is evident from the adjoining graph that the mean sten score on factor Q_4 of face-to-face teacher trainees (4.94) was less than the mean sten score of teacher trainees under distance mode (5.36). The null hypothesis 1.16 was rejected and led to conclusion that distance mode teacher trainees were more tense and frustrated than face-to-face teacher trainees.

4.3.2 Comparison on general intelligence, professional attitude, socio-economic and academic backgrounds

Students of the two modes of teacher education were compared on the general intelligence, professional attitude, socio-economic and academic backgrounds using't'-test along with their graphical representation. Following null hypotheses were tested:

(i) HO 1.17- There is no significant difference between the teacher trainees under Face-to-Face mode and Distance mode on general intelligence.

(ii) HO 1.18- There is no significant difference between the teacher trainees under Face-to-Face mode and Distance mode on professional attitude.

(iii) HO 1.19- There is no significant difference between the teacher trainees under Face-to-Face mode and Distance mode on socio-economic background.

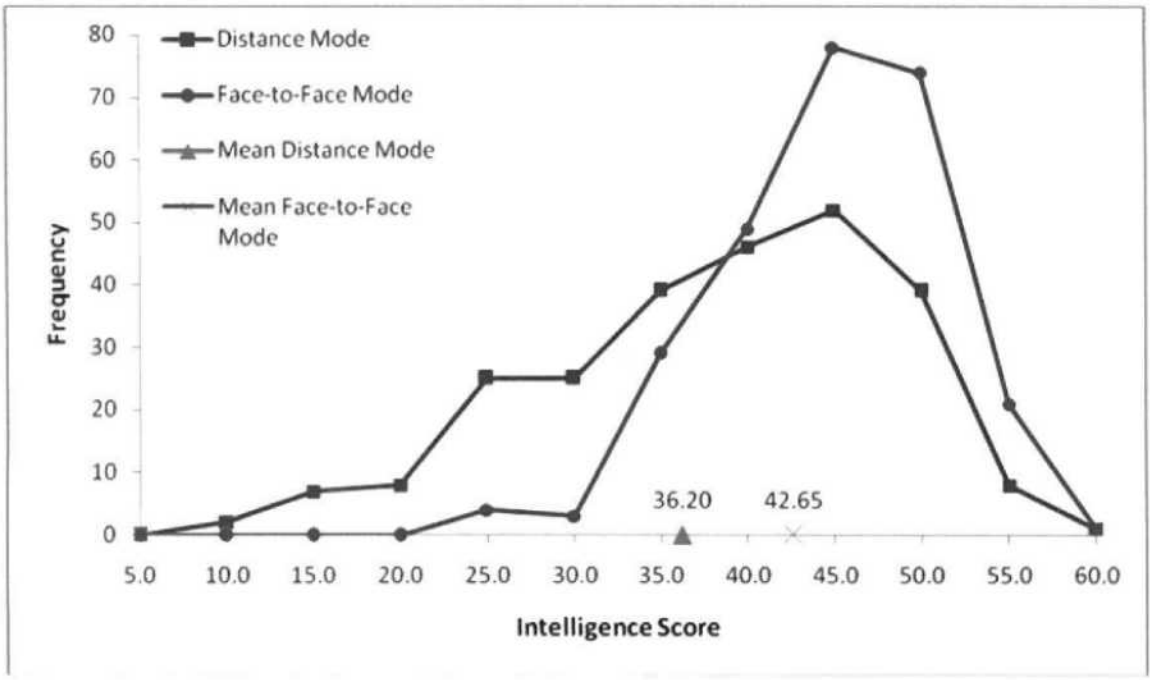
(iv) HO 1.20- There is no significant difference between the teacher trainees under Face-to-Face mode and Distance mode on academic background.

Table 4.21: Comparison on General Intelligence

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-face mode	259	42.65	6.42	0.74	8.76**
Distance mode	252	36.20	9.89		

** *Significant at 0.01 level*

Fig. 25: Graph showing the distribution of teacher trainees under both the modes of training on General Intelligence



As indicated in the Table 4.21, there is a significant difference in the level of general intelligence between the teacher trainees of both the modes. The corresponding t-ratio was 8.76 which was significant at 0.01 level. This means that the mean IQ of face-to-face mode trainees was higher than those under DE mode. The mean values of intelligence scores in the adjoining graph also show that teacher trainees of face-to-face mode (42.65) have higher intelligence level than those of their counterparts in the DE mode (36.20). Thus, the null hypothesis stating that there is no significant difference in the intelligence level of the teacher trainees of two modes is rejected.

Table 4.22: Comparison on Professional Attitude

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-face mode	259	4.42	0.67	0.08	2.85**
Distance mode	252	4.61	0.89		

** *Significant at 0.01 level*

Fig. 26: Graph showing the distribution of teacher trainees under both the modes of training on Professional Attitude.

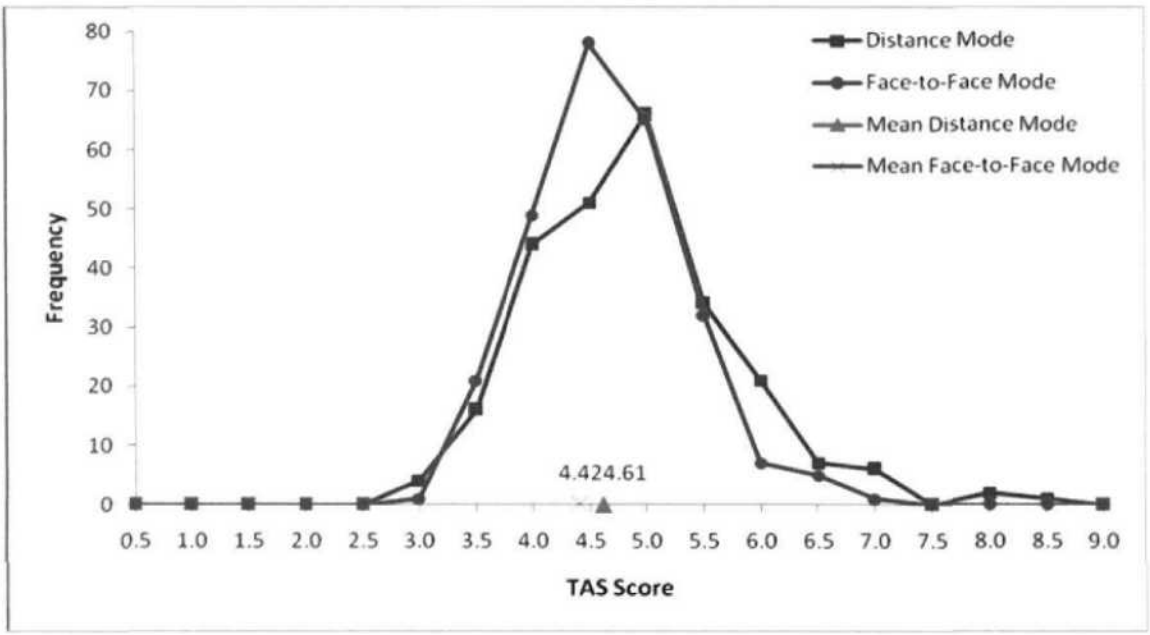


Table 4.22 depicts the results on the attitude towards teaching profession of teacher trainees under face-to-face and distance mode of education. There is a significant difference between the teacher trainees of two modes as the t-value came out to be 2.85 which is significant at 0.01 level, thus leading to the rejection of the null hypothesis stating the no significant difference in the professional attitude of teacher trainees under face-to-face mode and distance mode .The mean values of attitude scores in above graph indicate more favourable attitude of face-to-face mode teacher trainees(4.42) in comparison to the teacher trainees of distance mode (4.61) of education. *It is to be noted in the Teaching Attitude Scale by J.C. Goyal that a lower score indicates a favorable attitude and the higher score indicates unfavorable attitude of a subject*. This result shows that teacher trainees under DE mode have a less favourable attitude, than the teacher trainees under face-to-face mode. This leads

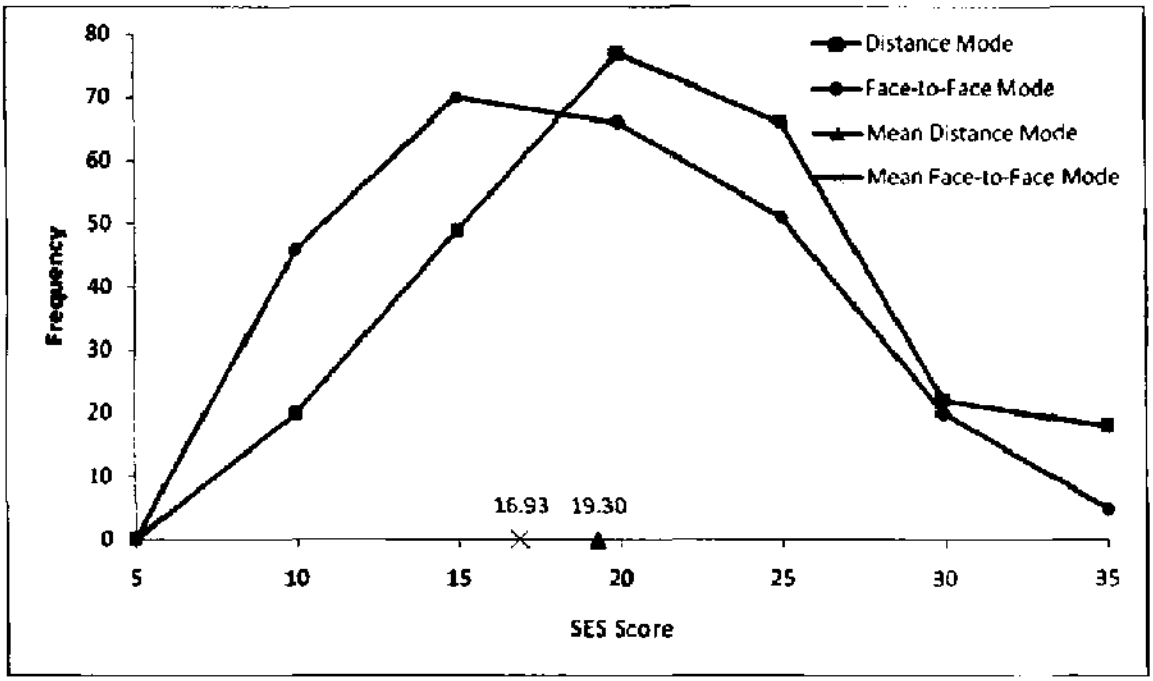
to the conclusion that face-to-face mode of training develops a more favourable professional attitude than DE mode.

Table 4.23: Comparison on Socio-Economic Background (SES)

Mod of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-face mode	259	16.93	6.38	0.56	4.23**
Distance mode	252	19.30	6.33		

** *Significant at 0.01 level*

Fig. 27: Graph showing the distribution of teacher trainees under both the modes of training on Socio-Economic Background.



The difference between socio-economic status of teacher trainees under face-to-face and distance education mode was found to be significant at 0.01 level. The corresponding t-value was 4.23 (Table 4.23).The mean value of socio-economic background for trainees of distance mode (19.30) was found to be higher than that of their counterparts (16.93) as indicated by Fig 27. It indicates that distance mode trainees have significantly better socio-economic background than the teacher trainees of face-to-face mode, thus leading to the rejection of the hypothesis 1.19. The overall

conclusion is that DE mode attract teacher trainees from better socio-economic background than the face-to-face mode of training.

Table 4.24: Comparison on Academic Background

Mode of education	Number of respondents N	Mean	Standard Deviation	Standard error of difference between means	t-value
Face-to-face mode	259	9.04	1.78	0.39	7.01**
Distance mode	252	7.91	1.86		

** *Significant at 0.01 level*

Fig. 28: Graph showing the distribution of teacher trainees under both the modes of training on Academic Background.

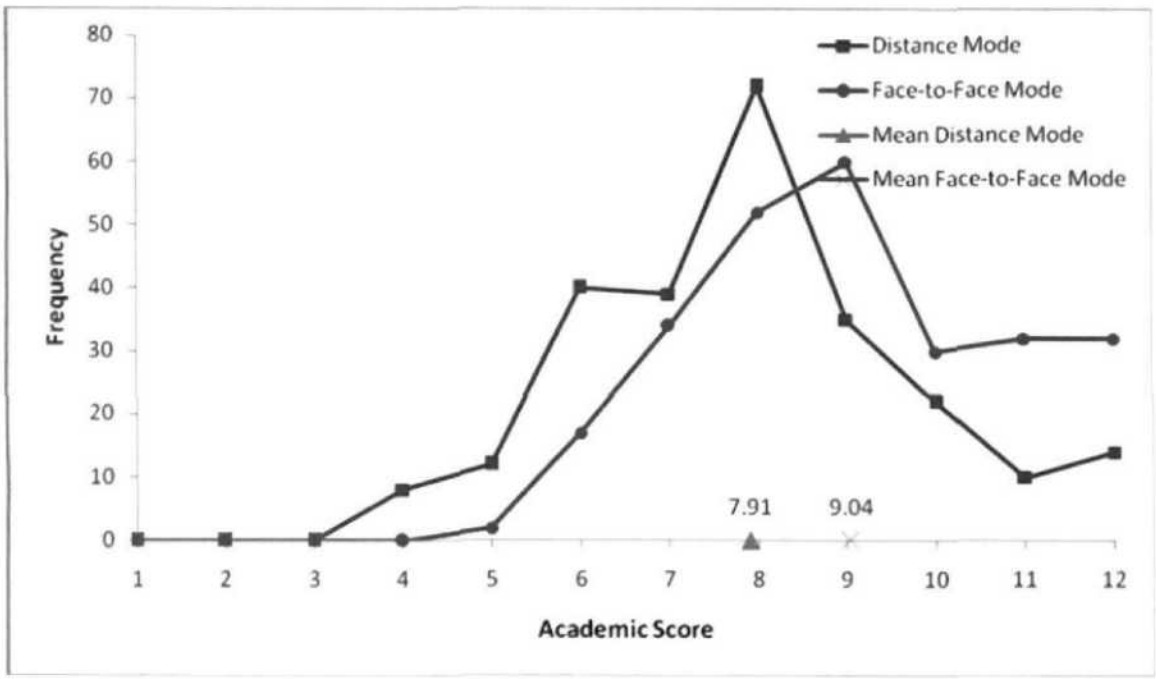


Table 4.24 depicts the results of comparison between academic background of teacher trainees under face-to-face and distance mode. The corresponding t-ratio was 7.01 which was found to be significant at 0.01 level. It is evident from the graph that the mean score on academic background of face-to-face trainees (9.04) is higher than the mean score of trainees under distance mode (7.91). It is concluded that candidates with higher academic background tend to choose face-to-face mode of training and those with lower academic background go for distance mode.

4.4 Relationship of training mode, gender and marital status to personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds

As spelled out in chapter 2, the fourth and fifth objectives of the study were related to the study of main and interaction effects of training mode, gender and marital status on personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds of teacher trainees under face-to-face and distance modes of training. The fourth objective was related to comparison of personality factors, general intelligence, professional attitude, socio-economic and academic backgrounds of male and female teacher trainees under face-to-face and distance modes of training. The fifth objective proposed to study the interaction effects of gender and marital status alongwith training mode, on the given variables. For achieving both these objectives, Analysis of Variance (ANOVA) technique following 2x2x2 factorial design was used. The following table presents the overall structure of the design.

	Face-to-Face mode		Distance mode	
	Male	**Female**	**Male**	**Female**
Married	*	*	*	*
Unmarried	*	*	*	*

** Mean scores and number of cases*

4.4.1 Relationship of training mode, gender and marital status to personality factors

In order to study if the training mode, gender and marital status of teacher trainees affect the personality of the teacher trainees, the following null hypotheses were framed and subjected to empirical testing. In order to test the hypotheses, the personality scores on all the sixteen factors were analyzed by applying the Analysis of Variance (2x2x2), and the following sixteen sub-hypothesis were tested:

(i) HO 2.1-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor A (Cool vs. Warm) of teacher trainees.

(ii) HO 2.2-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor B (Concrete thinking vs. Abstract thinking) of teacher trainees.

(iii) HO 2.3-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor C (Affected by feeling vs. Emotionally stable) of teacher trainees.

(iv) HO 2.4-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor E (Submissive vs. Dominant) of teacher trainees.

(v) HO 2.5-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor F (Sober vs. Enthusiastic) of teacher trainees.

(vi) HO 2.6-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor G (Expedient vs. Conscientious) of teacher trainees.

(vii) HO 2.7-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor H (Shy vs. Bold) of teacher trainees.

(viii) HO 2.8-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor I (Tough minded vs. Tender minded) of teacher trainees.

(ix) HO 2.9-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor L (Trusting vs. Suspicious) of teacher trainees.

(x) HO 2.10-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor M (Practical vs. Imaginative) of teacher trainees.

(xi) HO 2.11-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor N (Forthright vs. Shrewd) of teacher trainees.

(xii) HO 2.12-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor O (Self assured vs. Apprehensive) of teacher trainees.

(xiii) HO 2.13-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor Q_1 (Conservative vs. Experimenting) of teacher trainees.

(xiv) HO 2.14-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor Q_2 (Group oriented vs. Self sufficient) of teacher trainees.

(xv) HO 2.15-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor Q_3 (Undisciplined self conflict vs. Following self image) of teacher trainees.

(xvi) HO 2.16-There are no significant main and interaction effects of training mode, gender and marital status on the personality factor Q_4 (Relaxed vs. Tense) of teacher trainees.

Table 4.25: Effects of training mode, gender and marital status on Factor A

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	313.14	7	44.73	18.60**
Main Effects				
Training Mode	28.88	1	28.88	12.01*
Gender	197.43	1	197.43	82.11**
Marital Status	4.70	1	4.70	1.96
2-way Interactions				
Training Mode X Gender	21.51	1	21.51	8.95*
Training Mode X Marital Status	0.63	1	0.63	0.26
Gender X Marital Status	14.23	1	14.23	5.92*
3-way Interaction				
Training Mode X Gender X Marital Status	3.36	1	3.36	1.40
Within-Groups	1209.43	503	2.40	
TOTAL	1522.56	510	2.98	

** Significant at 0.05 level.*

*** Significant at 0.01 level*

Table 4.26: Mean sten scores on Factor A by training mode, gender and marital status (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Sten Score	4.97	4.31	3.92	5.27	4.64	4.63

Table 4.27: Mean sten scores on Factor A by Training Mode and Gender.

Training Modes

	Face-to-Face Mode	Distance Mode
Female	3.51 (N=144)	4.54 (N=96)
Male	5.30 (N=115)	5.24 (N=156)

Table 4.28: Mean sten scores on Factor A by Training Mode and Marital Status

Training Modes

	Face-to-Face Mode	Distance Mode
Married	4.11 (N=85)	4.92 (N=157)
Unmarried	4.40 (N=174)	5.05 (N=95)

Table 4.29: Mean sten scores on Factor A by Gender and Marital Status

	Married	Unmarried
Female	4.15 (N=108)	3.73 (N=132)
Male	5.03 (N=134)	5.50 (N=137)

Table 4.30: Mean sten scores on Factor A by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	**Female**	**Male**	**Female**
Married	5.03 (N=34)	3.49 (N=51)	5.03 (N=100)	4.74 (N=57)
Unmarried	5.42 (N=81)	3.52 (N=93)	5.61 (N=56)	4.26 (N=39)

Table 4.25 shows that overall F-ratio (18.60) is significant at 0.01 level indicating that between all groups differences on factor A are significant at 0.01 level and leads to the conclusion that all the eight groups are not equal on the personality factor A . It also indicates that main effect of the variable 'training mode' is significant (F-ratio of 12.01) at 0.05 level. Table 4.26 shows that mean scores of teacher trainees under face-to-face (4.31) and under distance mode (4.97) are significantly different, the mean score of DE mode trainees being more than that of face-to-face trainees. This leads to the conclusion that DE mode trainees are more warm, outgoing and easy-going as compared to face-to-face mode trainees.

'Gender' also has a significant main effect on factor A with an F-value (82.11) at 0.01 level. It is inferred that gender affects the factor A of teacher trainees. The mean scores of male and female teacher trainees are significantly different, the mean score of male trainees (5.27) being more than that of female trainees (3.92). It can be safely concluded that male respondents are more warm and outgoing than the female respondents.

The main effect related to 'marital status' was not significant. This shows that married and unmarried trainees irrespective of their gender and mode of training are equally cool or warm.

Two-Way Interactions: The interaction of training mode and gender was found to be significant (F-value = 8.95). Table 4.27 reveals that the interaction of training mode and gender is mainly due to the difference between female trainees under both the modes, as the difference between male trainees under the two modes is marginal. The

mean sten scores of male trainees under face-to-face and distance mode were higher than the female trainees under both the modes. Therefore, it can be concluded, in general, that the male teacher trainees under face-to-face and distance mode are more warm, good-natured and easy-going than their female counterparts under face-to-face and distance mode. The interaction effect has occurred because female trainees differ significantly in face-to-face and DE modes.

It can be also seen from Table 4.25 that there exists no significant interaction of training mode and marital status with respect to factor A as F-value of 0.26 is insignificant at both 0.01 and 0.05 level.

The interaction effect of gender and marital status was found to be significant with an F-value of 5.92. This difference is noticeable in case of both married and unmarried female trainees. The difference between the married and unmarried male trainees is marginal. It can be concluded that the female married trainees are more warm, easygoing and adaptable than unmarried female trainees.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor A (Cool vs. Warm) was not significant as indicated by the F- ratio (1.40). The main effects of training mode and gender were significant and 2-way interactions of Training Mode X Gender and Gender X Marital Status were also significant. But, the 3-way interaction of training mode gender, and marital status was not significant. Thus, the null hypothesis 2.1 was partially accepted.

The overall conclusion is that DE mode teacher trainees, in general, are more warm, outgoing and easygoing, than face-to-face mode trainees, but this difference is more pronounced between female trainees of both the modes. Moreover, the interaction of gender and marital status shows that while married female trainees are more warm, outgoing and easygoing than unmarried females but unmarried males are more warm, outgoing and easygoing than married males.

Table 4.31: Effects of training mode, gender and marital status on Factor B

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between- Groups	60.31	7	8.61	1.91
Main Effects				
Training Mode	25.78	1	25.78	5.72*
Gender	1.45	1	1.45	0.32
Marital Status	0.26	1	0.26	0.06
2-way Interactions				
Training Mode X Gender	15.90	1	15.90	3.53
Training Mode X Marital Status	10.05	1	10.05	2.23*
Gender X Marital Status	1.50	1	1.50	0.33
3-way Interaction				
Training Mode X Gender X Marital Status	0.83	1	0.83	0.18
Within-Group	2268.25	503	4.51	
TOTAL	2328.56	510	4.56	

** Significant at 0.05 level.*

Table 4.32: Mean sten scores of training mode, gender and marital status on Factor B (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	4.15	4.64	4.50	4.31	4.35	4.45

Table 4.33: Mean sten scores on Factor B by Training Mode and Gender.

Training Modes

	Face-to-Face Mode	Distance Mode
Female	4.83 (N=144)	4.00 (N=96)
Male	4.39 (N=115)	4.25 (N=156)

Table 4.34: Mean sten scores on Factor B by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Married	4.89 (N=85)	4.05 (N=157)
Unmarried	4.51 (N=174)	4.33 (N=95)

Table 4.35: Mean sten scores on Factor B by Gender and Marital Status

	Married	**Unmarried**
Female	4.50 (N=108)	4.50 (N=132)
Male	4.22 (N=134)	4.39 (N=137)

Table 4.36: Mean sten scores on Factor B by Training Mode, Gender and Marital Status

	Face-to-Face mode		**Distance mode**	
	Male	**Female**	**Male**	**Female**
Married	4.62 (N=34)	5.08 (N=51)	4.09 (N=100)	3.98 (N=57)
Unmarried	4.30 (N=81)	4.70 (N=93)	4.54 (N=56)	4.03 (N=39)

Table 4.31 shows that overall F-ratio is not significant showing that between all groups differences on factor B are not significant. It can be observed from Table 4.31 that 'training mode' has a significant main effect on factor B with an F-ratio of 5.72 which shows that choice of training mode affects factor B. The mean scores of teacher trainees under face-to-face mode (4.64) and under distance mode (4.15) are significantly different, the mean score of face-to-face mode trainees being higher than their distance counterparts. This leads to the conclusion that those who opt face-to-

face mode are more intelligent and bright than those who opt distance mode of training.

Female and male respondents do not differ significantly on factor B as the F-ratio of 0.32 is not significant. It can be concluded that female and male teachers are of equal intelligence.

Similarly, married and unmarried trainees are equal on factor B irrespective of the mode of training as the F-value of 0.06 is not significant. It implies that married and unmarried trainees are equal on concrete and abstract thinking.

Two-Way Interactions: It can be seen from Table 4.31 that interaction of training mode and gender is not significant.

Interactional effect of training mode and marital status with F-ratio (2.23) was significant. It can be observed from Table 4.34 that unmarried trainees are more intelligent than married trainees under distance mode whereas married trainees under face-to-face mode are more intelligent than unmarried trainees.

The Table 4.31 also indicates that there exists no significant interaction of gender and marital status with respect to factor B as F- ratio (0.33) is not significant at both 0.01 and 0.05 levels.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor B (Concrete thinking Vs. Abstract thinking) was not significant as indicated by the F-ratio (0.18). The main effect of training mode was significant and 2-way interaction of Training Mode X Marital Status was also significaot. But, the 3-way interaction of training mode, gender and marital status was not significant. Thus, the null hypothesis 2.2 was partially accepted.

The overall conclusion is that face-to-face mode teacher trainees in general, are more intelligent and bright than DE mode trainees. Female and male teacher trainees are of equal intelligence. Moreover, the interaction of training mode and marital status shows that under DE mode married trainees are more intelligent than unmarried trainees but the reverse is true for face-to-face mode trainees.

Table 4.37: Effects of training mode, gender and marital status on Factor C

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	153.06	7	21.87	7.95**
Main Effects				
Training Mode	74.94	1	74.94	27.25**
Gender	18.69	1	18.69	6.80**
Marital Status	1.54	1	1.54	0.56
2-way Interactions				
Training Mode X Gender	0.00	1	0.00	0.00
Training Mode X Marital Status	11.76	1	11.76	4.28*
Gender X Marital Status	4.64	1	4.64	1.69
3-way Interaction				
Training Mode X Gender X Marital Status	5.59	1	5.59	2.03
Within –Group	1383.09	503	2.75	
TOTAL	1536.16	510	3.01	

** Significant at 0.05 level.*

*** Significant at 0.01 level*

Table 4.38: Mean sten scores of training mode, gender and marital status on Factor C (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	3.98	4.90	4.73	4.19	4.25	4.62

Table 4.39: Mean sten scores on Factor C by Training Mode and Gender.

Training Modes

	Face-to-Face Mode	Distance Mode
Female	5.04 (N=144)	4.26 (N=96)
Male	4.71 (N=115)	3.81 (N=156)

Table 4.40: Mean sten scores on Factor C by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Married	5.08 (N=85)	3.80 (N=157)
Unmarried	4.80 (N=174)	4.28 (N=95)

Table 4.41: Mean sten scores on Factor C by Gender and Marital Status

	Married	**Unmarried**
Female	4.71 (N=108)	4.74 (N=132)
Male	3.87 (N=134)	4.50 (N=137)

Table 4.42: Mean sten scores on Factor C by Training Mode, Gender and Marital Status

	Face-to-Face mode		**Distance mode**	
	Male	**Female**	**Male**	**Female**
Married	4.91 (N=34)	5.20 (N=51)	3.52 (N=100)	4.28 (N=57)
Unmarried	4.63 (N=81)	4.96 (N=93)	4.32 (N=56)	4.23 (N=39)

It is evident from Table 4.37 that over-all F-ratio is significant, indicating the significance of the between all groups differences. It means that all the eight groups are not equal on factor C. The main effects of 'training mode' and 'gender' are significant, but the 'marital status' has no significant relationship with factor C. Table 4.38 shows that mean scores of teacher trainees under face-to-face (4.90) and distance mode (3.98) are significantly different, the mean score of face-to-face mode teacher trainees being more the distance mode trainees. Thus, it can be concluded that

those who opt face-to-face mode of training are emotionally more stable and mature than those who opt distance mode of training.

'Gender' also has a significant effect on factor C. There is a significant difference between the mean scores of male and female teacher trainees, the mean score of female teacher trainees (4.73) being more than the male trainees (4.19). It leads to the conclusion that female teacher trainees possess more ego strength than male teacher trainees.

Marital status has no significant (F value = 0.56) effect on factor C which means that married and unmarried trainees are equally affected by feelings irrespective of their training mode and gender.

Two-Way Interactions: The interaction of training mode and gender was found to be insignificant. Interactional effect of training mode and marital status with respect to factor C was significant with an F-ratio 4.28 at 0.05 level. It can be interpreted from mean scores that unmarried trainees (4.28) under distance mode are emotionally more stable than married trainees (3.80) but under face-to-face mode married teacher trainees (5.08) are emotionally more stable than unmarried trainees (4.80). Married and unmarried trainees under face-to-face mode are more realistic about life than their distance counterparts.

The Table also indicates that there exists no significant interaction of gender and marital status with respect to factor C as F- ratio (1.69) is not significant at both 0.01 and 0.05 levels.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor C (Affected by feelings Vs. Emotionally stable) was not significant as indicated by the F- ratio (2.03). The main effects of training mode and gender were significant and only 2-way interaction of Training Mode X Marital Status was significant. But, the 3-way interaction of training mode, gender and marital status was not significant. Thus, the null hypothesis 2.3 was partially accepted.

The overall conclusion is that teacher trainees under face-to-face mode, in general, are emotionally more stable and mature than those under distance mode. Female teacher trainees possess more ego strength than male teacher trainees. Moreover, the interaction of gender and marital status shows that under DE mode

unmarried trainees are emotionally more stable than married trainees but married trainees under face-to-face mode are more stable than unmarried trainees.

Table 4.43: Effects of training mode, gender and marital status on Factor E

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	53.88	7	7.69	2.67**
Main Effects				
Training Mode	19.09	1	19.09	6.62**
Gender	15.73	1	15.73	5.45*
Marital Status	2.19	1	2.19	0.76
2-way Interactions				
Training Mode X Gender	8.97	1	8.97	3.11
Training Mode X Marital Status	1.01	1	1.01	0.35
Gender X Marital Status	0.16	1	0.16	0.06
3-way Interaction				
Training Mode X Gender X Marital Status	1.89	1	1.89	0.66
Within-Group	1451.29	503	2.88	
TOTAL	1505.17	510	2.95	

** Significant at 0.05 level.*

*** Significant at 0.01 level*

Table 4.44: Mean scores of training mode, gender and marital status on Factor E (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	4.71	5.14	5.15	4.73	4.93	4.93

Table 4.45: Mean sten scores on Factor E by Training Mode and Gender.

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	5.42 (N=144)	4.75 (N=96)
Male	4.79 (N=115)	4.68 (N=156)

Table 4.46: Mean sten scores on Factor E by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Married	5.19 (N=85)	4.78 (N=157)
Unmarried	5.11 (N=174)	4.58 (N=95)

Table 4.47: Mean sten scores on Factor E by Gender and Marital Status

	Married	**Unmarried**
Female	5.14 (N=108)	5.16 (N=132)
Male	4.75 (N=134)	4.70 (N=137)

Table 4.48: Mean sten scores on Factor E by Training Mode, Gender and Marital Status

	Face-to-Face mode		**Distance mode**	
	Male	**Female**	**Male**	**Female**
Married	4.68 (N=34)	5.53 (N=51)	4.78 (N=100)	4.79 (N=57)
Unmarried	4.84 (N=81)	5.35 (N=93)	4.50 (N=56)	4.69 (N=39)

Table 4.43 shows the results of ANOVA. As evident from the significant overall F-ratio (2.67) between all groups, differences on factor E are significant. Table 4.43 indicates the main effects of training mode, gender and marital status on factor E. The effect of 'training mode' in relation to factor E is significant (F= 6.62) at 0.01 level. It can be seen from Table 4.44 that there is a significant difference between the mean scores of teacher trainees under face-to-face and distance mode of education, the mean score of face-to-face trainees (5.14) being more than that of distance trainees (4.71). Therefore, it can be concluded, in general, that face-to-face teacher trainees are more dominant and aggressive than the trainees under distance mode.

F-ratio of gender is 5.45 which is also significant at 0.05 level. It is inferred that gender affects the factor E of Cattell's 16 PF scale of teacher trainees. The mean scores of female and male trainees are significantly different as female teacher trainees have higher mean score (5.15) than male teacher trainees (4.73). It can be concluded, in general, that female teacher trainees are more competitive than male teacher trainees.

The effect of marital status on factor E is not significant at any level (F-value = 0.76) which indicates that married and unmarried trainees irrespective of training mode and gender are equally submissive or dominant.

Two-Way Interactions: It can be observed from table 4.43 that F- values of all the interactions i.e. Training Mode X Gender (3.11), Training Mode X Marital Status (0.35) and Gender X Marital Status (0.06) are not significant at any level. It leads to the conclusion that interactive effect of above variables on factor E is not significant.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor E was not significant as indicated by the F- ratio (0.66). The main effects of training mode and gender were significant. But, 2-way and 3-way interaction of training mode, gender and marital status was not significant. Thus, the null hypothesis 2.4 was partially accepted.

The overall conclusion is that face-to-face mode teacher trainees are more dominant and aggressive than DE mode teacher trainees, but this difference is more visible between female trainees of both the modes. Married and unmarried trainees are equally submissive or dominant irrespective of training mode and gender.

Table 4.49: Effects of training mode, gender and marital status on Factor F

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-groups	166.38	7	23.77	15.44**
Main Effects				
Training Mode	56.98	1	56.98	19.45**
Gender	50.12	1	50.12	17.11**
Marital Status	0.01	1	0.01	0.003
2-way Interactions				
Training Mode X Gender	19.35	1	19.35	6.60**
Training Mode X Marital Status	0.12	1	0.12	0.04
Gender X Marital Status	19.85	1	19.85	6.78**
3-way Interaction				
Training Mode X Gender X Marital Status	0.06	1	0.06	0.02
Within-Group	1473.60	503	2.93	
TOTAL	1639.98	510	3.22	

*** Significant at 0.01 level*

Table 4.50: Mean scores of training mode, gender and marital status on Factor F (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	4.29	3.47	3.47	4.23	4.00	3.77

Table 4.51: Mean sten scores on Factor F by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	3.31 (N=144)	3.71 (N=96)
Male	3.67 (N=115)	4.65 (N=156)

Table 4.52: Mean sten scores on Factor F by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	3.47 (N=85)	4.28 (N=157)
Unmarried	3.47 (N=174)	4.31 (N=95)

Table 4.53: Mean sten scores on Factor F by Gender and Marital Status

	Married	Unmarried
Female	3.73 (N=108)	3.26 (N=132)
Male	4.21 (N=134)	4.26 (N=137)

Table 4.54: Mean sten scores on Factor F by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	Female	Male	Female
Married	3.32 (N=34)	3.57 (N=51)	4.51 (N=100)	3.88 (N=57)
Unmarried	3.81 (N=81)	3.17 (N=93)	4.89 (N=56)	3.46 (N=39)

Table 4.49 shows the results of ANOVA. As evident from the significant overall F-ratio of 15.44 between all groups, differences are significant. It also indicates that F-ratio of 'training mode' is 19.45 which is significant at 0.01 level. Table 4.50 shows that mean score of teacher trainees under distance mode (4.29) is significantly higher than those under face-to-face mode (3.47). Thus, it leads to the conclusion that distance teacher trainees are more enthusiastic and cheerful than face-to-face trainees.

F-ratio of gender is also significant at 0.01 level. It is inferred that gender also significantly affect the personality factor F. Table 4.50 shows that mean scores of female and male teacher trainees are significantly different, the mean score of male trainees (4.23) being more than that of female trainees (3.47). Therefore, it indicates more spontaneous behavior of male teacher trainees in comparison to female trainees.

F-value of marital status is 0.003 which is not significant at any level. Therefore, it can be concluded that married and unmarried teacher trainees irrespective of their training mode and gender are equally sober or enthusiastic.

Two-Way Interactions: Interactive effect of training mode and gender in relation to Factor F was found to be significant. It is evident from Table 4.51 that male trainees under both the modes are more enthusiastic than their female counterparts and also the female and male trainees under distance mode are more spontaneous and cheerful than the face-to-face female and male trainees.

Interaction of training mode and marital status was not significant with F-value (0.04) but interactional effect of gender and marital status with respect to factor F was significant with F-ratio of 6.78. Although the difference between married and unmarried male trainees under two modes is marginal, it can be said from mean scores (Table 4.53) that female married teacher trainees are more talkative, heedless and expressive than unmarried female trainees whereas unmarried male trainees are more active and carefree than married male trainees.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor F (Sober vs. Enthusiastic) was not significant as indicated by the F-ratio (0.02). The main effects of training mode and gender were significant and 2-way interactions of Training Mode X Gender and Gender X Marital Status were also significant. But, the 3-way interaction of training mode gender, and marital status was not significant. Thus, the null hypothesis 2.5 was partially accepted.

The overall conclusion is that DE mode teacher trainees are more enthusiastic and cheerful than face-to-face mode teacher trainees, but this difference is more pronounced between male trainees of both the modes. Moreover, the interaction of gender and marital status shows that female married trainees are more talkative, heedless and expressive than unmarried female trainees whereas unmarried maletrainees are more active and carefree than married male trainees.

Table 4.55: Effects of training mode, gender and marital status on Factor G

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	475.42	7	67.92	21.49**
Main Effects				
Training Mode	349.61	1	349.61	110.63**
Gender	10.80	1	10.80	3.42
Marital Status	0.98	1	0.98	0.31
2-way Interactions				
Training Mode X Gender	24.21	1	24.21	7.66**
Training Mode X Marital Status	5.60	1	5.60	1.77
Gender X Marital Status	0.19	1	0.19	0.06
3-way Interaction				
Training Mode X Gender X Marital Status	2.58	1	2.58	0.82
Within-Groups	1589.57	503	3.16	
TOTAL	2064.99	510	4.05	

** *Significant at 0.01 level*

Table 4.56: Mean scores of training mode, gender and marital status on Factor G (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	4.07	5.90	5.32	4.71	4.67	5.29

Table 4.57: Mean sten scores on Factor G by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	5.84 (N=144)	4.54 (N=96)
Male	5.98 (N=115)	3.78 (N=156)

Table 4.58: Mean sten scores on Factor G by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	6.00 (N=85)	3.95 (N=157)
Unmarried	5.86 (N=174)	4.26 (N=95)

Table 4.59: Mean sten scores on Factor G by Gender and Marital Status

	Married	Unmarried
Female	5.12 (N=108)	5.48 (N=132)
Male	4.31 (N=134)	5.11 (N=137)

Table 4.60: Mean sten scores on Factor G by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	Female	Male	Female
Married	6.00 (N=34)	6.00 (N=51)	3.73 (N=100)	4.33 (N=57)
Unmarried	5.98 (N=81)	5.75 (N=93)	3.86 (N=56)	4.85 (N=39)

It is evident from the significant overall F-ratio of 21.49 between all groups, differences are significant. Table 4.55 shows the main and interaction effect of training mode, gender and marital status on factor G (Expedient vs. Conscientious) of teacher trainees. F-ratio of 'training mode' (110.63) is significant at 0.01 level which means that choice of training mode affects factor G. This shows that mean scores of teacher trainees under face-to-face and distance mode are significantly different, the mean score of face-to-face trainees (5.90) being more than that of distance trainees

(4.07). It leads to the conclusion that face-to-face mode teacher trainees are more conforming and moralistic than their distance counterparts.

F-ratios of gender and marital status are 3.42 and 0.31 respectively which are not significant at any level. It indicates that there is no influence of gender and marital status on factor G of teacher trainees. It leads to the conclusion that both male, female and married, unmarried teacher trainees irrespective of their training mode are equally expedient or conscientious.

Two-Way Interactions: The interaction of training mode and gender was found to be significant. It can be concluded from Table 4.57 that both female and male teacher trainees under face-to-face mode are more conscientious, conforming, moralistic and rule-bound than the female and male teacher trainees under the distance mode. While face-to-face and DE mode trainees differ significantly on factor G, but the difference is more noticeable in case of male and female trainees under distance mode only. It can be seen from Table 4.57 that the difference between male and female trainees under face-to-face mode is marginal.

The interactive effect of training mode and marital status was not significant (F- ratio 1.77). F-ratio of the interaction of gender and marital status was also not significant at any level.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor G (Expedient vs. Conscientious) was not significant as indicated by the F-ratio (0.82). The main effect of training mode was significant and 2-way interactions of Training Mode X Gender was also significant. But, the 3-way interaction of training mode, gender and marital status was not significant. Thus, the null hypothesis 2.6 was partially accepted.

The overall results lead to the conclusion that face-to-face mode trainees are more conforming and moralistic than their distance counterparts. There is no influence of gender and marital status on factor G. Both female and male teacher trainees under face-to-face mode are more conscientious, conforming, moralistic and rule-bound than the female and male teacher trainees under the distance mode.

Table 4.61: Effects of training mode, gender and marital status on Factor H

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	119.08	7	17.01	8.12**
Main Effects				
Training Mode	5.81	1	5.81	2.77
Gender	10.03	1	10.03	4.79*
Marital Status	6.35	1	6.35	3.03
2-way Interactions				
Training Mode X Gender	76.23	1	76.23	36.39**
Training Mode X Marital Status	0.76	1	0.76	0.36
Gender X Marital Status	1.42	1	1.42	0.67
3-way Interaction				
Training Mode X Gender X Marital Status	4.40	1	4.40	2.10
Within group	1053.63	503	2.09	
TOTAL	1172.71	510	2.29	

** Significant at 0.05 level.*

*** Significant at 0.01 level*

Table 4.62: Mean scores of training mode, gender and marital status on Factor H (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	5.39	5.19	5.12	5.44	5.21	5.36

Table 4.63: Mean sten scores on Factor H by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	4.69 (N=144)	5.77 (N=96)
Male	5.81 (N=115)	5.16 (N=156)

Table 4.64: Mean sten scores on Factor H by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	5.08 (N=85)	5.27 (N=157)
Unmarried	5.24 (N=174)	5.59 (N=95)

Table 4.65: Mean sten scores on Factor H by Gender and Marital Status

	Married	Unmarried
Female	5.23 (N=108)	5.03 (N=132)
Male	5.19 (N=134)	5.68 (N=137)

Table 4.66: Mean sten scores on Factor H by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	Female	Male	Female
Married	5.82 (N=34)	4.59 (N=51)	4.97 (N=100)	5.81 (N=57)
Unmarried	5.80 (N=81)	4.74 (N=93)	5.50 (N=56)	5.72 (N=39)

It is evident from table 4.61 that overall F-ratio (8.12) is significant showing that the between all groups differences are significant. The effect of 'training mode' is not significant (F-ratio 2.77) in relation to factor H.

F-ratio of gender is 4.79 which is significant at 0.05 level. It is inferred that 'gender' affects the personality factor H of teacher trainees. Male and female teacher trainees differ in their mean scores, the mean score of male trainees (5.44) being more

than that of female trainees (5.12). Thus, it can be concluded, in general, that male teacher trainees are more bold and venturesome than female teacher trainees.

The effect of 'marital status' is not significant at any level which indicates that married and unmarried trainees do not differ significantly. It leads to the conclusion that married and unmarried trainees irrespective of gender and training mode are equally shy or bold.

Two-Way Interactions: The interaction of training mode and gender was found to be significant at 0.01 level. The results presented in Table 4.63 will clarify the interaction. While female teacher trainees under distance mode are more bold and venturesome than the face-to-face female trainees but the reverse is true for male trainees. The male trainees under face-to-face mode are more bold and venturesome than DE male teacher trainees.

It can be observed from Table 4.61 that F- ratios of both the interactions of training mode X marital status (0.36) and gender X marital status (0.67) are not significant at any level. It leads to the conclusion that interactive effect of above variables on factor H (Shy vs. Bold) is not significant.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor H (Shy vs. Bold) was not significant as indicated by the F-ratio (2.10). The main effects of gender was significant and 2-way interactions of training mode X gender was also significant. But, the 3-way interaction of training mode gender, and marital status was not significant. Thus, the null hypothesis 2.7 was partially accepted.

The overall conclusion is that face-to-face and DE mode teacher trainees are equally shy or bold. Male teacher trainees are more bold and venturesome than female teacher trainees. While female teacher trainees under distance mode are more bold and venturesome than the face-to-face female trainees but the converse is true for male trainees. The male trainees under face-to-face mode are more bold and venturesome than DE male teacher trainees.

Table 4.67: Effects of training mode, gender and marital status on Factor I

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	961.59	7	137.37	46.93**
Main Effects				
Training Mode	64.09	1	64.09	21.89**
Gender	769.76	1	769.76	262.98**
Marital Status	6.74	1	6.74	2.30
2-way Interactions				
Training Mode X Gender	22.99	1	22.99	7.86**
Training Mode X Marital Status	0.52	1	0.52	0.18
Gender X Marital Status	1.75	1	1.75	0.60
3-way Interaction				
Training Mode X Gender X Marital Status	0.07	1	0.07	0.03
Within-Group	1472.34	503	2.92	
TOTAL	2433.94	510	4.77	

** *Significant at 0.01 level*

Table 4.68: Mean scores of training mode, gender and marital status on Factor I (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	4.96	3.84	3.00	5.62	4.44	4.35

Table 4.69: Mean sten scores on Factor I by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	2.55 (N=144)	3.69 (N=96)
Male	5.46 (N=115)	5.74 (N=156)

Table 4.70: Mean sten scores on Factor I by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	3.51 (N=85)	4.95 (N=157)
Unmarried	4.01 (N=174)	4.98 (N=95)

Table 4.71: Mean sten scores on Factor I by Gender and Marital Status

	Married	Unmarried
Female	2.96 (N=108)	3.04 (N=132)
Male	5.63 (N=134)	5.61 (N=137)

Table 4.72: Mean sten scores on Factor I by Training Mode, Gender and Marita Status

	Face-to-Face mode		Distance mode	
	Male	**Female**	**Male**	**Female**
Married	5.32 (N=34)	2.29 (N=51)	5.74 (N=100)	3.56 (N=57)
Unmarried	5.52 (N=81)	2.69 (N=93)	5.75 (N=56)	3.87 (N=39)

It is evident from the significant overall F-ratio of 46.93 between all groups, differences are significant. Table 4.67 indicates the main effects of training mode, gender and marital status on factor I. The effect of 'training mode' is significant (F ratio- 21.89) in relation to factor I. The mean scores of teacher trainees under face-to-face mode (3.84) and distance mode (4.96) are significantly different, the mean score of DE teacher trainees being more than that of face-to-face mode. It can be

concluded, in general, distance teacher trainees are more sensitive and over-protected than the trainees under regular mode.

F-ratio of gender is also significant at 0.01 level. It is inferred that 'gender' affects the factor I of teacher trainees. It can be observed from Table 4.68 that mean score of male trainees (5.62) is significantly higher than their female counterparts (3.00). It leads to the conclusion, in general, that male teacher trainees are more intuitive and refined than female teacher trainees.

The effect of marital status on factor I is not significant at any level. It leads to the conclusion that married and unmarried trainees are equally tough-minded or tender-minded.

Two-Way Interactions: The interactive effect of training mode and gender was found to be significant at 0.01 level. It is observed from Table 4.69 that mean scores of male trainees under both the modes are more than their female counterparts. It can be concluded from Table 4.69 that male trainees under both the modes are more sensitive and tender minded than their female counterparts. While DE mode teacher trainees are more sensitive than face-to-face trainees, but this difference is more noticeable only in case of female trainees. The difference between the male trainees under face-to-face and distance mode is marginal. The main effect between the training modes has occurred mainly due to the female trainees under both the modes.

It can be observed from Table 4.67 that F- ratios of both the interactions of training mode X marital status (0.18) and gender X marital status (0.60) are not significant at any level. It leads to the conclusion that interactive effect of above variables on factor I is not significant.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor I of was not significant as indicated by the F-ratio (0.03). The main effects of training mode and gender were significant and 2-way interaction of training mode X gender was also significant. But, the 3-way interaction of training mode gender, and marital status was not significant. Thus, the null hypothesis 2.8 was partially accepted.

The overall conclusion is that DE mode teacher trainees are more sensitive and over-protected than the trainees under regular mode, but this difference is more visible between female teacher trainees of both the modes.

Table 4.73: Effects of training mode, gender and marital status on Factor L

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	153.06	7	21.87	7.95**
Main Effects				
Training Mode	72.94	1	72.94	27.25**
Gender	19.69	1	19.69	6.80**
Marital Status	2.54	1	2.54	0.56
2-way Interactions				
Training Mode X Gender	0.00	1	0.00	0.00
Training Mode X Marital Status	1.34	1	1.34	0.60
Gender X Marital Status	9.25	1	9.25	4.14*
3-way Interaction				
Training Mode X Gender X Marital Status	5.59	1	5.59	2.03
Within-Group	1383.09	503	2.75	
TOTAL	1536.16	510	3.01	

** Significant at 0.05 level.*

*** Significant at 0.01 level*

Table 4.74: Mean scores of training mode, gender and marital status on Factor L

(Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	5.70	4.11	6.15	3.78	5.11	4.70

Table 4.75: Mean sten scores on Factor L by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	5.78 (N=144)	6.70 (N=96)
Male	2.02 (N=115)	5.08 (N=156)

Table 4.76: Mean sten scores on Factor L by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	4.14 (N=85)	5.64 (N=157)
Unmarried	4.09 (N=174)	5.80 (N=95)

Table 4.77: Mean sten scores on Factor L by Gender and Marital Status

	Married	Unmarried
Female	6.33 (N=108)	5.99 (N=132)
Male	4.13 (N=134)	3.45 (N=137)

Table 4.78: Mean sten scores on Factor L by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	Female	Male	Female
Married	1.94 (N=34)	5.61 (N=51)	4.87 (N=100)	6.98 (N=57)
Unmarried	2.05 (N=81)	5.87 (N=93)	5.46 (N=56)	6.28 (N=39)

It is evident from the significant overall F-ratio of 7.95 between all groups, differences are significant. Table 4.73 indicates that F- ratio of 'training mode' is 27.25 which is significant at 0.01 level. It indicates that training mode has significant influence on personality factor L. It can be seen from Table 4.74 that DE mode teacher trainees have higher mean score (M – 5.70) than teacher trainees under face-to-face mode (M = 4.11). It leads to the conclusion, in general, that distance teacher trainees are more suspicious than face-to-face trainees.

F-ratio of gender is 6.80 which is also significant at 0.01 level. It is inferred that 'gender' also affects the personality factor L. Male and female teacher trainees differ with each other in their mean scores as female trainees (6.15) has higher mean score than male trainees (3.78). Thus, it can be concluded; in general, female trainees possess more distrustful behavior than male trainees.

F-ratio of marital status is 0.56 which is not significant at any level. It leads to the conclusion that married and unmarried trainees irrespective of their training and gender are equally trusting or suspicious.

Two-Way Interactions: Interaction of training mode and gender is not significant. Interactional effect of training mode and marital status with respect to factor L is also not significant.

Interactive effect of gender and marital status is significant with F-ratio 4.14. It can be said from mean scores (Table 4.77) that married female (6.33) and male teacher trainees (4.13) are more suspicious than unmarried female (5.99) and male trainees (3.45).

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor L is not significant as indicated by the F-ratio (2.03). The main effects of training mode and gender were significant and 2-way interaction of training mode X marital status was also significant. But, the 3-way interaction of training mode gender, and marital status was not significant. Thus, the null hypothesis 2.9 was partially accepted.

The overall conclusion is that DE mode teacher trainees are more suspicious than face-to-face trainees. Female trainees possess more distrustful behavior male trainees. It is clear from interactive effect of gender and marital status that married female and male teacher trainees are more suspicious than unmarried female and male trainees.

Table 4.79: Effects of training mode, gender and marital status on Factor M

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	1028.73	7	146.96	44.28**
Main Effects				
Training Mode	135.16	1	135.16	40.72**
Gender	527.14	1	527.14	158.82
Marital Status	3.95	1	3.95	1.19
2-way Interactions				
Training Mode X Gender	390.55	1	390.55	117.66**
Training Mode X Marital Status	13.11	1	13.11	3.95*
Gender X Marital Status	9.47	1	9.47	2.85
3-way Interaction				
Training Mode X Gender X Marital Status	0.20	1	0.20	0.06
Within-Group	1669.56	503	3.32	
TOTAL	2698.29	510	5.29	

* *Significant at 0.05 level.*

** *Significant at 0.01 level*

Table 4.80: Mean scores of training mode, gender and marital status on Factor M (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	4.76	3.98	5.35	3.49	4.58	4.17

Table 4.81: Mean sten scores on Factor M by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	5.66 (N=144)	4.90 (N=96)
Male	1.87 (N=115)	4.68 (N=156)

Table 4.82: Mean sten scores on Factor M by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	4.47 (N=85)	4.64 (N=157)
Unmarried	3.74 (N=174)	4.96 (N=95)

Table 4.83: Mean sten scores on Factor M by Gender and Marital Status

	Married	Unmarried
Female	5.49 (N=108)	5.24 (N=132)
Male	3.85 (N=134)	3.13 (N=137)

Table 4.84: Mean sten scores on Factor M by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	**Female**	**Male**	**Female**
Married	1.94 (N=34)	6.16 (N=51)	4.50 (N=100)	4.89 (N=57)
Unmarried	1.84 (N=81)	5.39 (N=93)	5.00 (N=56)	4.90 (N=39)

It is evident from the significant overall F-ratio (44.28) between all groups, differences on factor M are significant. Table 4.79 indicates the main effect of the variable 'training mode' is significant with an F-value of 40.72. The mean scores of teacher trainees under face-to-face mode (3.98) and distance mode (4.76) are significantly different on factor M, the mean score of DE mode teacher trainees being more than that of face-to-face mode. It can be concluded, in general, the teacher

trainees who opt distance mode of training are more imaginative and absent-minded than those who opt face-to-face mode of training.

'Gender' also has a significant effect on factor M. It can be seen from Table 4.80 that mean score of female (5.35) and male (3.49) teacher trainees are significantly different. Thus, it leads to the conclusion; in general, female teacher trainees are more absorbed in thought than male teacher trainees.

Marital status has no impact on factor M. It can be said, in general, married and unmarried trainees are equally practical or imaginative.

Two-Way Interactions: The interaction of training mode and gender was found to be significant at 0.01 level. It can be observed from Table 4.81 that mean scores of female trainees under face-to-face mode is more than female trainees under DE mode but the reverse is true for male trainees. It can be concluded from Table 4.81 that female teacher trainees under face-to-face mode are more imaginative and impractical than distance female trainees whereas male teacher trainees under distance mode are more absent-minded than face-to-face male trainees. While trainees under two modes differ significantly on factor M, but the difference is more noticeable in case of face-to-face trainees. The difference between female and male trainees under distance mode is marginal.

Interactional effect of training mode and marital status with respect to factor M is also significant with an F-ratio of 3.95 at 0.05 level. Table 4.82 shows that under distance mode the mean score of unmarried trainees (4.96) is more than the married trainees (4.64) but mean score of married trainees (4.47) is higher than the unmarried trainees (3.74) under face-to-face. Therefore, it can be concluded that unmarried trainees are more imaginative than married trainees under distance mode whereas married teacher trainees under face-to-face mode are more imaginative than unmarried trainees under the same mode. The interaction is the result of trainees under face-to-face mode because the difference of distance trainees is marginal.

The table also indicates that there exists no significant interaction of gender and marital status with respect to factor M as F- ratio (2.85) is not significant at both 0.01 and 0.05 level.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor M (Practical vs. Imaginative) was not significant as indicated by the

F- ratio (0.06). The main effect of training mode was significant and 2-way interactions of training mode X gender and gender X marital status were also significant. But, the 3-way interaction of training mode gender, and marital status was not significant. Thus, the null hypothesis 2.10 was partially accepted.

The overall conclusion is that the DE mode teacher trainees are more imaginative and absent-minded than the face-to-face mode teacher trainees. Female teacher trainees are more absorbed in thought than male teacher trainees. Female teacher trainees under face-to-face mode are more imaginative and impractical than distance female trainees whereas male teacher trainees under distance mode are more absent-minded than face-to-face male trainees. Unmarried trainees are more imaginative than married trainees under distance mode whereas married teacher trainees under face-to-face mode are more imaginative than unmarried trainees under the same mode.

Table 4.85: Effects of training mode, gender and marital status on Factor N

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	470.49	7	67.21	17.93**
Main Effects				
Training Mode	179.53	1	179.53	47.90**
Gender	206.54	1	206.54	55.11**
Marital Status	19.59	1	19.59	5.23*
2-way Interactions				
Training Mode X Gender	1.99	1	1.99	0.53
Training Mode X Marital Status	0.94	1	0.94	0.25
Gender X Marital Status	0.22	1	0.22	0.06
3-way Interaction				
Training Mode X Gender X Marital Status	1.51	1	1.51	0.40
Within-Groups	1885.15	503	3.75	
TOTAL	2355.64	510	4.62	

** Significant at 0.05 level.*

*** Significant at 0.01 level*

Table 4.86: Mean scores of training mode, gender and marital status on Factor N (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	4.79	6.16	6.28	4.78	5.48	5.49

Table 4.87: Mean sten scores on Factor N by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	Distance Mode
Female	6.81 (N=144)	5.49 (N=96)
Male	5.35 (N=115)	4.37 (N=156)

Table 4.88: Mean sten scores on Factor N by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	6.42 (N=85)	4.96 (N=157)
Unmarried	6.03 (N=174)	4.52 (N=95)

Table 4.89: Mean sten scores on Factor N by Gender and Marital Status

	Married	Unmarried
Female	6.29 (N=108)	6.27 (N=132)
Male	4.82 (N=134)	4.74 (N=137)

Table 4.90: Mean sten scores on Factor N by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	**Female**	**Male**	**Female**
Married	5.50 (N=34)	7.04 (N=51)	4.59 (N=100)	5.61 (N=57)
Unmarried	5.28 (N=81)	6.68 (N=93)	3.96 (N=56)	5.31 (N=39)

Table 4.85 shows that overall F-ratio of 17.93 is significant at 0.01 level showing that between all groups differences are significant at 0.01 level. It also shows that F- ratio of 'training mode' is 47.90 which is significant at 0.01 level. It indicates that training mode has significant influence on personality factor N. The mean scores of teacher trainees under face-to-face mode (6.16) and distance mode (4.79) are significantly different, the mean score of face-to-face teacher trainees being more than that of DE mode. It can be said, in general, that face-to-face teacher trainees are more shrewd than distance trainees.

F-ratio of gender is 55.11 which is also significant at 0.01 level. It is inferred that gender also affects the personality factor N. Female and male teacher trainees differ significantly in their mean scores, as female(6.28) has higher mean score than male trainees (4.78) which indicates the more polished behavior of female teacher trainees than male trainees.

F- ratio of marital status is 5.23 which is also significant at 0.05 level. It can be observed from Table 4.86 that mean scores of married and unmarried trainees differ significantly. Therefore, it can be concluded, in general, that unmarried teacher trainees are less sentimental than their married counterparts.

Two-Way Interactions: Interactional effect of training mode and gender was not significant. Interaction of training mode and marital status was also not significant with F- ratio (0.25). Interactional effect of gender and marital status with respect to factor N was also not significant.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor N (Forthright vs. Shrewd) was not significant as indicatcd by the F-ratio (0.40). The main effects of training mode and gender were significant. But, 2-way interactions and 3-way interaction of training mode gender, and marital status were not significant. Thus, the null hypothesis 2.11 was partially accepted.

The overall results lead to the conclusion that face-to-face teacher trainees are more shrewd than distance trainees. Female teacher trainees possess more polished behavior than male trainees. Unmarried teacher trainees, in general, are less sentimental than their married counterparts.

Table 4.91: Effects of training mode, gender and marital status on Factor O

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	127.09	7	18.16	5.23**
Main Effects				
Training Mode	107.37	1	107.37	30.92**
Gender	2.88	1	2.88	0.83
Marital Status	1.13	1	1.13	0.33
2-way Interactions				
Training Mode X Gender	3.96	1	3.96	1.14
Training Mode X Marital Status	1.07	1	1.07	0.31
Gender X Marital Status	6.63	1	6.63	1.91
3-way Interaction				
Training Mode X Gender X Marital Status	0.28	1	0.28	0.08
Within-Group	1746.65	503	3.47	
TOTAL	1873.75	510	3.67	

*** Significant at 0.01 level*

Table 4.92: Mean scores of training mode, gender and marital status on Factor O (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	5.04	5.95	5.51	5.49	5.40	5.59

Table 4.93: Mean sten scores on Factor O by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	Distance Mode
Female	5.78 (N=144)	5.10 (N=96)
Male	6.17 (N=115)	4.99 (N=156)

Table 4.94: Mean sten scores on Factor O by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	5.98 (N=85)	5.10 (N=157)
Unmarried	5.94 (N=174)	4.94 (N=95)

Table 4.95: Mean sten scores on Factor O by Gender and Marital Status

	Married	Unmarried
Female	5.60 (N=108)	5.43 (N=132)
Male	5.25 (N=134)	5.74 (N=137)

Table 4.96: Mean sten scores on Factor O by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	Female	Male	Female
Married	6.06 (N=34)	5.92 (N=51)	4.97 (N=100)	5.32 (N=57)
Unmarried	6.22 (N=81)	5.70 (N=93)	5.04 (N=56)	4.79 (N=39)

As evident from Table 4.91 the overall F-ratio (5.23) is significant, therefore between all groups differences are significant. It also shows the interaction effect of training mode, gender and marital status on factor O. F-ratio of 'training mode' (30.92) is significant at 0.01 level. This shows that choice of training mode is influenced by the factor O. The mean scores of teacher trainees under face-to-face mode (5.95) and distance mode (5.04) are significantly different, the mean score of face-to-face teacher trainees being more than that of DE mode. It leads to the conclusion that face-to-face mode teacher trainees are more apprehensive and insecure than their distance counterparts.

F-ratios of gender and marital status are 0.83 and 0.33 respectively which are not significant at any level. It means that there is no influence of gender and marital status on factor O.

Two-Way Interactions: Although mode of training affect factor O of personality but the interaction of training mode and gender was not significant. The interactive effect of training mode and marital status was not significant. F-value of the interaction of gender and marital status (1.91) was also not significant at any level.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor O (Self-assured vs. Apprehensive) was not significant as indicated by the F- ratio (0.08). The main effect of training mode was significant. But, 2-way interactions and 3-way interaction of training mode gender, and marital status were not significant. Thus, the null hypothesis 2.12 was partially accepted.

The overall results lead to the conclusion that face-to-face mode teacher trainees are more apprehensive and insecure than their distance counterparts. There is no influence of gender and marital status on factor O.

Table 4.97: Effects of training mode, gender and marital status on Factor Q_1

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between- Groups	397.33	7	56.76	20.33**
Main Effects				
Training Mode	40.84	1	40.84	14.63**
Gender	287.66	1	287.66	103.03**
Marital Status	0.07	1	0.07	0.02
2-way Interactions				
Training Mode X Gender	6.02	1	6.02	2.16
Training Mode X Marital Status	0.22	1	0.22	0.08
Gender X Marital Status	2.10	1	2.10	0.75
3-way Interaction				
Training Mode X Gender X Marital Status	3.22	1	3.22	1.15
Within Group	1404.38	503	2.79	
TOTAL	1801.72	510	3.53	

** *Significant at 0.01 level*

Table 4.98: Mean scores of training mode, gender and marital status on Factor Q_1 (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	5.44	6.31	6.75	5.11	5.76	5.99

Table 4.99: Mean sten scores on Factor Q_1 by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	6.87 (N=144)	6.56 (N=96)
Male	6.17 (N=115)	4.99 (N=156)

Table 4.100: Mean sten scores on Factor Q_1 by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Married	6.44 (N=85)	5.40 (N=157)
Unmarried	6.24 (N=174)	5.52 (N=95)

Table 4.101: Mean sten scores on Factor Q_1 by Gender and Marital Status

	Married	**Unmarried**
Female	6.81 (N=108)	6.70 (N=132)
Male	4.93 (N=134)	5.30 (N=137)

Table 4.102: Mean sten scores on Factor Q_1 by Training Mode, Gender and Marital Status

	Face-to-Face mode		**Distance mode**	
	Male	**Female**	**Male**	**Female**
Married	5.71 (N=34)	6.92 (N=51)	4.66 (N=100)	6.70 (N=57)
Unmarried	5.56 (N=81)	6.84 (N=93)	4.93 (N=56)	6.36 (N=39)

Table 4.97 shows the results of ANOVA. As evident from the significant overall F-ratio (20.33), the between all groups differences are significant. Table 4.97 indicates the main effect of the variable 'training mode' is significant with an F-ratio of 14.63. The mean scores of teacher trainees under face-to-face mode (6.31) and distance mode (5.44) are significantly different, the mean score of face-to-face teacher

trainees being more than that of DE mode. It leads to the conclusion that those who opt face-to-face mode of training are more experimenting than those who opt distance mode of training.

Gender also has a significant effect on factor Q_1.The mean score of female trainees (6.75) is more than their male counterparts (5.11). In general, it can be said that female teacher trainees are more liberal and open to change in comparison to male teacher trainees irrespective of their training mode.

Marital status has no impact on factor Q_1. Married and unmarried teacher trainees are equally conservative or experimenting.

Two-Way Interactions: Interaction of training mode and gender was not significant. The interactive effect of training mode and marital status was not significant on factor Q_1. F-ratio of the interaction of gender and marital status (0.75) was also not significant at any level.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor Q_1 (Conservative vs. Experimenting) of teacher trainees was not significant as indicated by the F-ratio (1.15). The main effects of training mode and gender were significant. But, 2-way interactions and 3-way interaction of training mode gender, and marital status were not significant. Thus, the null hypothesis 2.13 was partially accepted.

The overall conclusion is that the face-to-face mode teacher trainees are more experimenting than the DE mode teacher trainees but, the difference is appreciable between the male trainees of both the modes. Female teacher trainees are more liberal and open to change in comparison to male teacher trainees irrespective of their training mode. Married and unmarried teacher trainees are equally conservative or experimenting.

Table 4.103: Effects of training mode, gender and marital status on Factor Q_2

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	150.76	7	21.54	7.99**
Main Effects				
Training Mode	101.13	1	101.13	37.53**
Gender	20.75	1	20.75	7.70**
Marital Status	7.31	1	7.31	2.71
2-way Interactions				
Training Mode X Gender	0.00	1	0.00	0.00
Training Mode X Marital Status	0.90	1	0.90	0.33
Gender X Marital Status	1.18	1	1.18	0.44
3-way Interaction				
Training Mode X Gender X Marital Status	6.30	1	6.30	2.34
Within-Group	1355.51	503	2.69	
TOTAL	1506.27	510	2.95	

** *Significant at 0.01 level*

Table 4.104: Mean scores of training mode, gender and marital status on Factor Q_2 (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	4.97	5.91	5.75	5.18	5.42	5.47

Table 4.105: Mean sten scores on Factor Q_2 by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	6.11 (N=144)	5.20 (N=96)
Male	5.66 (N=115)	4.83 (N=156)

Table 4.106: Mean sten scores on Factor Q_2 by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	6.02 (N=85)	5.10 (N=157)
Unmarried	5.86 (N=174)	4.76 (N=95)

Table 4.107: Mean sten scores on Factor Q_2 by Gender and Marital Status

	Married	Unmarried
Female	5.69 (N=108)	5.79 (N=132)
Male	5.20 (N=134)	5.16 (N=137)

Table 4.108: Mean sten scores on Factor Q_2 by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	Female	Male	Female
Married	5.65 (N=34)	6.27 (N=51)	5.05 (N=100)	5.18 (N=57)
Unmarried	5.67 (N=81)	6.02 (N=93)	4.43 (N=56)	5.23 (N=39)

The Table 4.103 reveals that the overall F-ratio (7.99) is significant at 0.01 level, therefore, between all groups differences are significant. It also indicates that F- ratio of 'training mode' is 37.53 which is significant at 0.01 level. It leads to the conclusion that training mode has significant influence on personality factor Q_2. Face-to-face mode teacher trainees has higher mean score (5.91) than distance mode (4.97) on

factor Q_2 .It can be concluded that face-to-face teacher trainees are more self-sufficient in comparison to distance teacher trainees.

F-value of 'gender' was 7.70 which was also significant at 0.01 level. It is inferred that 'gender' also affects the personality factor Q_2. Female (5.75) and male (5.18) teacher trainees differ significantly in their mean scores. It can be concluded, in general, female trainees possess more resourceful behavior than male trainees.

F-ratio of marital status is 2.71 which was not significant at any level. Married and unmarried trainees are equally group-oriented or self-sufficient.

Two-Way Interactions: The interaction of training mode and gender was not significant. The interactive effect of training mode and marital status was found to be insignificant on factor Q_2. F-value of the interaction of gender and marital status (0.44) was also not significant at any level.

Three-Way interaction of the variables training mode, gender and marital status in relation to factor Q_2 (Group-oriented vs. Self-sufficient) of teacher trainees was not significant as indicated by the F-ratio (2.34). The main effects of training mode and gender were significant. But, 2-way interactions and 3-way interaction of training mode gender, and marital status were not significant. Thus, the null hypothesis 2.14 was partially accepted.

The overall results lead to the conclusion that face-to-face teacher trainees are more self-sufficient in comparison to DE mode teacher trainees. Female trainees possess more resourceful behavior than male trainees. Married and unmarried trainees are equally group-oriented or self-sufficient.

Table 4.109: Effects of training mode, gender and marital status on Factor Q_3

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between Groups	173.97	7	24.85	8.18**
Main Effects				
Training Mode	34.22	1	34.22	11.27**
Gender	2.22	1	2.22	0.73
Marital Status	29.86	1	29.86	9.83**
2-way Interactions				
Training Mode X Gender	60.99	1	60.99	20.09**
Training Mode X Marital Status	2.88	1	2.88	0.95
Gender X Marital Status	0.56	1	0.56	0.18
3-way Interaction				
Training Mode X Gender X Marital Status	0.98	1	0.98	0.32
Within-Group	1527.38	503	3.03	
TOTAL	1701.35	510	3.34	

** Significant at 0.05 level.*

*** Significant at 0.01 level*

Table 4.110: Mean scores of training mode, gender and marital status on Factor Q_3 (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	4.26	4.98	4.76	4.51	4.27	4.95

Table 4.111: Mean sten scores on Factor Q_3 by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	4.71 (N=144)	4.84 (N=96)
Male	5.33 (N=115)	3.90 (N=156)

Table 4.112: Mean sten scores on Factor Q_3 by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Married	4.76 (N=85)	4.01 (N=157)
Unmarried	5.09 (N=174)	4.68 (N=95)

Table 4.113: Mean sten scores on Factor Q_3 by Gender and Marital Status

	Married	**Unmarried**
Female	4.59 (N=108)	4.90 (N=132)
Male	4.01 (N=134)	4.99 (N=137)

Table 4.114: Mean sten scores on Factor Q_3 by Training Mode, Gender and Marital Status

	Face-to-Face mode		**Distance mode**	
	Male	**Female**	**Male**	**Female**
Married	5.15 (N=34)	4.51 (N=51)	3.63 (N=100)	4.67 (N=57)
Unmarried	5.41 (N=81)	4.82 (N=93)	4.39 (N=56)	5.10 (N=39)

Table 4.109 shows the interaction effect of training mode, gender and marital status on factor Q_3. It reveals that the overall F-ratio (8.18) is significant at 0.01 level showing that between all groups differences are significant and leads to the conclusion that all the eight groups differ significantly.

F-ratio of 'training mode' is significant at 0.01 level which means that choice of training mode is influenced by the factor Q_3. The mean scores of teacher trainees

under face-to-face mode (4.98) and distance mode (4.26) are significantly different, the mean score of face-to-face teacher trainees being more than that of DE mode. It interprets that face-to-face mode teacher trainees are socially more precise than their distance counterparts.

F-ratio of gender is not significant at any level which means that there is no influence of gender on factor Q_3 of teacher trainees.

F- ratio of marital status is 9.83 which is significant at 0.01 level. The mean scores of married and unmarried trainees are significantly different. It can be observed from Table 4.110 that unmarried teacher trainees have stronger control of their emotions than their married counterparts.

Two-Way Interactions: The interaction of training mode and gender with respect to factor Q_3 was found to be significant with F-ratio 20.09. While face-to-face mode teacher trainees are socially more precise than their distance counterparts, but this difference is noticeable in case of male trainees. The difference between the female teacher trainees of face-to-face and distance mode is marginal (Table 4.111). The main effect between training modes has occurred mainly due to difference between male trainees of two modes. This explains the significant interaction effect.

The interactive effect of training mode and marital status was not significant. F-value of the interaction of gender and marital status (0.18) was also not significant at any level.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor Q_3 of teacher trainees was not significant as indicated by the F- ratio (0.32). The main effects of training mode and marital status were significant and 2-way interaction of Training Mode X Gender was also significant. But, the 3-way interaction of training mode, gender and marital status was not significant. Thus, the null hypothesis 2.15 was partially accepted.

The overall conclusion is that face-to-face mode teacher trainees are socially more precise than their distance counterparts but the difference is noticeable between male trainees of two modes. Unmarried teacher trainees have stronger control of their emotions than their married counterparts.

Table 4.115: Effects of training mode, gender and marital status on Factor Q_4

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	260.64	7	37.23	14.88**
Main Effects				
Training Mode	3.78	1	3.78	1.51
Gender	187.86	1	187.86	75.11**
Marital Status	1.06	1	1.06	0.42
2-way Interactions				
Training Mode X Gender	32.59	1	32.59	13.03**
Training Mode X Marital Status	14.26	1	14.26	5.70*
Gender X Marital Status	14.80	1	14.80	5.92*
3-way Interaction				
Training Mode X Gender X Marital Status	1.41	1	1.41	0.56
Within Group	1258.06	503	2.50	
TOTAL	1518.69	510	2.97	

* *Significant at 0.05 level.*

** *Significant at 0.01 level*

Table 4.116: Mean scores of training mode, gender and marital status on Factor Q_4 (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	5.37	4.94	4.47	5.75	5.26	5.05

Table 4.117: Mean sten scores on Factor Q_4 by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	4.58 (N=144)	4.32 (N=96)
Male	5.39 (N=115)	6.01 (N=156)

Table 4.118: Mean sten scores on Factor Q_4 by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Married	4.75 (N=85)	5.53 (N=157)
Unmarried	5.03 (N=174)	5.09 (N=95)

Table 4.119: Mean sten scores on Factor Q_4 by Gender and Marital Status

	Married	**Unmarried**
Female	4.64 (N=108)	4.34 (N=132)
Male	5.75 (N=134)	5.74 (N=137)

Table 4.120: Mean sten scores on Factor Q_4 by Training Mode, Gender and Marital Status

	Face-to-Face mode		**Distance mode**	
	Male	**Female**	**Male**	**Female**
Married	5.03 (N=34)	4.57 (N=51)	6.00 (N=100)	4.70 (N=57)
Unmarried	5.54 (N=81)	4.58 (N=93)	6.02 (N=56)	3.77 (N=39)

Table 4.115 shows that overall F-ratio (14.88) is significant at 0.01 level showing that between all groups differences are significant at 0.01 level. The table also indicates that the effect of 'training mode' is not significant (F=1.51) in relation to factor Q_4 .It implies, in general, that teacher trainees under both the modes are equally relaxed or tense.

F-ratio of gender is 75.11 which is significant at 0.01 level. It is inferred that gender affects the factor Q_4. Male teacher trainees have higher mean score (5.75) than female teacher trainees (4.47) which leads to the conclusion that that male teacher trainees are more tense and frustrated than female teacher trainees.

The effect of marital status on factor Q_4 is not significant at any level (F=0.42). It can be said that married and unmarried teacher trainees irrespective of their training mode and gender are equally relaxed or tense.

Two-Way Interactions: It can be observed from table 4.115 that the F-ratio of the interaction of training mode and gender (13.03) is significant at 0.01 level. While the female and male trainees differ significantly on factor Q_4, but the difference is noticeable in case of male trainees under both the modes (Table 4.117). The difference between the female trainees is marginal. It can be concluded that the male trainees under both the modes are more tense and frustrated than their female counterparts.

The table 4.115 shows that F- ratio of the interaction of training mode and marital status (5.70) is significant at 0.05 level. It can be interpreted from mean scores (Table 4.118) that married trainees under distance mode are more restless and inpatient than unmarried trainees whereas unmarried teacher trainees under face-to-face mode are more tense and frustrated.

Interactional effect of gender and marital status with respect to factor Q_4 is significant with an F- value of 5.92. While the interaction between gender and marital status is significant on factor Q_4, but the difference is noticeable in case of married and unmarried female trainees. The difference between the married and unmarried male trainees is marginal. It can be said from mean scores (Table 4.119) that married female and male teacher trainees are more tense and frustrated than unmarried female and male trainees.

Three-Way Interaction of the variables training mode, gender and marital status in relation to factor Q_4 (Relaxed vs. Tense) of teacher trainees was not significant as indicated by the F- value (0.56). The main effect of gender was significant and 2-way interactions of Training Mode X Gender and Gender X Marital Status were also significant. But, the 3-way interaction of training mode, gender and marital status was not significant. Thus, the null hypothesis 2.16 was partially accepted.

The overall conclusion is that that teacher trainees under both the modes are equally relaxed or tense. Male teacher trainees are more tense and frustrated than female teacher trainees. Married trainees under distance mode are more restless and inpatient than unmarried trainees whereas unmarried teacher trainees under face-to-face mode are more tense and frustrated. Married female and male teacher trainees are more tense and frustrated than unmarried female and male trainees.

4.4.2 Relationship of training mode, gender and marital status to general intelligence, professional attitude, socio-economic and academic background

In order to study if the training mode, gender and marital status of teacher trainees are related to general intelligence, professional attitude, socio-economic and academic background of teacher trainees, the following null hypotheses were framed and subjected to empirical testing. In order to test the hypotheses, the scores on general intelligence, professional attitude, socio-economic and academic background of teacher trainees were analyzed by applying the Analysis of Variance (2x2x2) and the following hypotheses were tested:

(i) HO 2.17-There are no significant main and interaction effects of training mode, gender and marital status on the level of general intelligence of teacher trainees.

(ii) HO 2.18-There are no significant main and interaction effects of training mode, gender and marital status on professional attitude of teacher trainees.

(iii) HO 2.19-There are no significant main and interaction effects of training mode, gender and marital status on socio-economic background of teacher trainees.

(iv) HO 2.20-There are no significant main and interaction effects of training mode, gender and marital status on academic background of teacher trainees.

Table 4.121: Effects of training mode, gender and marital status on General Intelligence

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	6362.74	7	908.96	13.37**
Main Effects				
Training Mode	3672.37	1	3672.37	54.08**
Gender	196.85	1	196.85	2.89
Marital Status	375.91	1	375.91	5.53*
2-way Interactions				
Training Mode X Gender	36.10	1	36.10	1.42
Training Mode X Marital Status	336.91	1	336.91	4.96*
Gender X Marital Status	39.83	1	39.83	0.59
3-way Interaction				
Training Mode X Gender X Marital Status	73.84	1	73.84	1.09
Within Group	34154.54	503	67.90	
TOTAL	40517.28	510	79.45	

** Significant at 0.05 level.*

*** Significant at 0.01 level*

Table 4.122: Mean scores of training mode, gender and marital status on General Intelligence (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	36.20	42.65	40.71	38.37	37.61	41.14

Table 4.123: Mean scores on General Intelligence by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	**Distance Mode**
Female	42.85 (N=144)	37.51 (N=96)
Male	42.40 (N=115)	35.40 (N=156)

Table 4.124: Mean scores on General Intelligence by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	42.60 (N=85)	34.90 (N=157)
Unmarried	42.67 (N=174)	38.35 (N=95)

Table 4.125: Mean scores on General Intelligence by Gender and Marital Status

	Married	Unmarried
Female	38.97 (N=108)	42.14 (N=132)
Male	36.51 (N=134)	40.19 (N=137)

Table 4.126: Mean scores on General Intelligence by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	**Female**	**Male**	**Female**
Married	42.15 (N=34)	42.90 (N=51)	34.59 (N=100)	35.46 (N=57)
Unmarried	42.51 (N=81)	42.82 (N=93)	36.84 (N=56)	40.51 (N=39)

Table 4.121 shows that overall F-ratio is significant at 0.01 level showing that between all groups, differences on intelligence are significant at 0.01 level and leads to the conclusion that all the four groups are not equal on the level of general intelligence. The main effects related to 'training mode' and 'marital status' are significant at 0.01 and 0.05 levels respectively, but the main effect of 'gender' is not significant. This shows that choice of training mode is influenced by general

intelligence level of the teacher trainees. The mean scores of teacher trainees under face-to-face mode (42.65) and distance mode (36.20) are significantly different on general intelligence, the mean score of face-to-face teacher trainees being more than that of DE mode. This leads to the conclusion that candidates with higher level of intelligence tend to go for teacher education programme under face-to-face mode and DE mode training attracts candidates with relatively lower intelligence.

There is no significant difference in the intelligence level of female and male respondents as the F- ratio 2.89 is not significant. This shows that IQ level of female and male teacher trainees under both the modes is equal.

Marital status also has a significant main effect on general intelligence level. It can be seen from Table 4.122 that there is a significant difference between the married and unmarried trainees, mean score of unmarried trainees (41.14) being more than the married teacher trainees (37.61). So, it can be safely concluded from mean scores that in general, unmarried trainees have higher general intelligence level than married respondents irrespective of the training mode. This is because, most of the married trainees opt DE mode of training.

Two- Way Interactions: The F-ratio (1.42) of interaction of training mode and gender in relation to general intelligence was not significant.

It can be seen that the interaction effect of training mode and marital status with respect to general intelligence level (Table 4.123) is significant with F-ratio of 4.96. As observed in Table 4.124, unmarried trainees under both the modes have higher level of general intelligence than the married trainees. The difference between the married and unmarried trainees under face-to-face mode is marginal. The interaction has occurred mainly due to difference between married and unmarried trainees under DE mode.

It can be also observed from Table 4.121 that the interaction of gender and marital status is not significant with respect to general intelligence as F-ratio (0.59) is insignificant at both 0.01 and 0.05 level.

Three- Way Interaction of the variables training mode, gender and marital status in relation to the general intelligence level of teacher trainees was not significant as indicated by the F-ratio (1.09). The main effects of training mode and marital status were significant and 2-way interaction of Training Mode X Marital Status was also

significant. But, the 3-way interaction of training mode gender, and marital status was not significant. Thus, the null hypothesis 2.17 was partially accepted.

The overall conclusion is that face-to-face mode enrolls trainees with higher level of intelligence in comparison to DE mode. Female and male teacher trainees are equal on general intelligence. Unmarried trainees under both the modes have higher level of intelligence than the married trainees, but this difference is more pronounced between married and unmarried trainees under DE mode.

Table 4.127: Effects of training mode, gender and marital status on Professional Attitude

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between Groups	12.16	7	1.74	2.81**
Main Effects				
Training Mode	2.46	1	2.46	3.97*
Gender	1.06	1	1.06	1.72
Marital Status	1.69	1	1.69	2.73
2-way Interactions				
Training Mode X Gender	0.72	1	0.72	1.17
Training Mode X Marital Status	0.96	1	0.96	1.55
Gender X Marital Status	1.09	1	1.09	1.76
3-way Interaction				
Training Mode X Gender X Marital Status	1.52	1	1.52	2.46
Within-Group	311.12	503	0.62	
TOTAL	323.28	510	0.63	

** Significant at 0.05 level.*

*** Significant at 0.01 level*

Table 4.128: Mean scores of training mode, gender and marital status on Professional Attitude (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	4.61	4.42	4.45	4.57	4.60	4.43

Table 4.129: Mean scores on Professional Attitude by Training Mode and Gender.

	Training Modes	
	Face-to-Face Mode	Distance Mode
Female	4.35 (N=144)	4.59 (N=96)
Male	4.49 (N=115)	4.63 (N=156)

Table 4.130: Mean scores on Professional Attitude by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	4.42 (N=85)	4.70 (N=157)
Unmarried	4.41 (N=174)	4.47 (N=95)

Table 4.131: Mean scores on Professional Attitude by Gender and Marital Status

	Married	Unmarried
Female	4.48 (N=108)	4.42 (N=132)
Male	4.70 (N=134)	4.45 (N=137)

Table 4.132: Mean scores on Professional Attitude by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	Female	Male	Female
Married	4.67 (N=34)	4.24 (N=51)	7.52 (N=100)	4.69 (N=57)
Unmarried	4.41 (N=81)	4.42 (N=93)	4.49 (N=56)	4.44 (N=39)

Table 4.127 shows the results of ANOVA. As evident from the significant overall F-ratio (2.81), the between all groups differences are significant. It leads to the conclusion that all the eight groups are not equal on professional attitude. It also indicates that main effect of the variable 'training mode' is significant with an F-value of 3.97. This shows that training mode (Face-to-Face vs. DE) makes a difference as far as development of professional attitude is concerned. *It is to be noted in the Teaching Attitude Scale by J.C. Goyal that a lower score indicates a favorable attitude and the higher score indicates unfavorable attitude of a subject.* The direction of mean differences (Table 4.128) shows that Face-to-Face mode (4.42) develops better professional attitude (more favourable) than the DE mode (4.61). Therefore, it can be concluded that regular mode trainees develop more favourable attitude towards teaching than their DE mode counterparts.

Professional attitude of female and male teacher trainees is the same as the F-ratio 1.72 is not significant. Gender difference has no effect on development of professional attitude.

Professional attitude of married and unmarried trainees is the same, in general, as the F- ratio 2.73 is not significant. Thus, marital status also does not affect professional attitude.

Two-Way Interactions: It is evident from Table 4.127 that interaction of training mode and gender is not significant. It also shows that the interactional effect of training mode and marital status with respect to teaching attitude is not significant (F ratio-1.55).

The Table also indicates that there exists no significant interaction of gender and marital status as F-ratio (1.76) is insignificant at both 0.01 and 0.05 level. So, it can be concluded that none of the above interactions was significant with respect to teaching attitude.

Three-Way Interaction of the variables training mode, gender and marital status in relation to the teaching attitude of teacher trainees was also not significant as indicated by the F-ratio (2.46). The main effects of training mode was significant. But, 2-way interactions and 3-way interaction of training mode, gender and marital status were not significant. Thus, the null hypothesis 2.18 was partially accepted.

The overall results lead to the conclusion that, as far as development of favourable attitude is concerned, Face-to-Face mode is a better approach as compared to DE mode irrespective of gender and marital status of trainees.

Table 4.133: Effects of training mode, gender and marital status on Socio-Economic Background

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	2317.64	7	331.09	8.77**
Main Effects				
Training Mode	1179.98	1	1179.98	31.32**
Gender	420.96	1	420.96	11.16**
Marital Status	370.07	1	370.07	9.81**
2-way Interactions				
Training Mode X Gender	542.12	1	542.12	14.37**
Training Mode X Marital Status	138.12	1	138.12	3.66*
Gender X Marital Status	19.62	1	19.62	0.52
3-way Interaction				
Training Mode X Gender X Marital Status	1.87	1	1.87	0.05
Within Group	18974.27	503	37.72	
TOTAL	21291.91	510	41.75	

** Significant at 0.05 level.*

*** Significant at 0.01 level*

Table 4.134: Mean scores of training mode, gender and marital status on Socio-Economic Background (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	19.31	16.93	18.82	17.46	17.62	18.53

Table 4.135: Mean scores on Socio-Economic Background by Training Mode and Gender

	Training Modes	
	Face-to-Face Mode	Distance Mode
Female	16.71 (N=144)	21.99 (N=96)
Male	17.20 (N=115)	17.65 (N=156)

Table 4.136: Mean scores on Socio-Economic Background by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	15.09 (N=85)	18.99 (N=157)
Unmarried	17.82 (N=174)	19.83 (N=95)

Table 4.137: Mean scores on Socio-Economic Background by Gender and Marital Status

	Married	Unmarried
Female	18.75 (N=108)	18.88 (N=132)
Male	16.71 (N=134)	18.20 (N=137)

Table 4.138: Mean scores on Socio-Economic Background by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	Female	Male	Female
Married	15.06 (N=34)	15.12 (N=51)	17.27 (N=100)	22.00 (N=57)
Unmarried	18.10 (N=81)	17.58 (N=93)	18.34 (N=56)	21.97 (N=39)

Table 4.133 shows the results of ANOVA. As evident from the significant overall F-ratio (8.77), the between all groups differences are significant on SES. It leads to the conclusion that all the eight groups are not equal on socio-economic background.

The main effects of all the variables 'training mode', 'gender' and 'marital status' are significant with F-ratios 3132, 11.16 and 9.81 respectively. It means that teacher trainees coming from different socio-economic backgrounds have different choice of training modes. The mean scores of teacher trainees on SES, under face-to-face mode (16.93) and distance mode (19.31) are significantly different, the mean score of DE teacher trainees being more than that of face-to-face mode. It leads to the conclusion that the teacher trainees opting for DE mode come from higher socio-economic background, and converse is true for face-to-face mode.

Table 4.134 shows that the mean score of female teacher trainees (18.82) is more than that of male teacher trainees (17.46). Thus, it can be concluded that, in general, female teacher trainees come from more well-to-do families than male trainees.

Unmarried teacher trainees (18.53) have higher mean SES score than married trainees (17.62) which leads to the conclusion that, in general, unmarried teacher trainees come from better socio-economic background than married candidates.

Two-Way Interactions: The interaction of training mode and gender of trainees in relation to socio-economic background is significant with F-ratio 14.37. While DE mode teacher trainees come from higher socio-economic background than the teacher trainees under face-to-face mode, but this difference is noticeable only in case of female trainees. The difference between the male trainees of DE mode and face-to-face mode is marginal (Table 4.135). This explains the significant interaction effect.

Interactional effect of training mode and marital status is also significant with F-ratio of 3.66. Table 4.136 more clearly explains the significant interaction. While unmarried trainees come from better socio-economic background than married trainees, but this difference is more noticeable in case of face-to-face trainees. The difference between married and unmarried trainees under distance mode is marginal.

The interaction of gender and marital status is not significant (F-ratio = 0.52) in relation to socio-economic background.

Three-Way Interaction of the variables training mode, gender and marital status in relation to the socio-economic background of teacher trainees was not significant as indicated by the F-ratio (0.05). The main effects of training mode, gender and marital status were significant and 2-way interactions of training mode X gender and training mode X marital status were also significant. But, the 3-way interaction of training mode gender, and marital status was not significant. Thus, the null hypothesis 2.19 was partially accepted.

The overall conclusion is that SES of teacher trainees under DE mode, in general, is higher than that of trainees under face-to-face mode, but this difference is mainly due to higher SES of female trainees in DE mode. Moreover, the DE mode has higher number of married trainees which also accounts for their higher SES, because married trainees have higher SES due to other earning members of the family.

Table 4.139: Effects of training mode, gender and marital status on Academic Background

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F-value
Between-Groups	292.99	7	41.86	13.51**
Main Effects				
Training Mode	116.11	1	116.11	37.47**
Gender	107.42	1	107.42	34.66**
Marital Status	2.86	1	2.86	0.92
2-Way Interactions				
Training Mode X Gender	0.57	1	0.57	0.18
Training Mode X Marital Status	13.05	1	13.05	4.21*
Gender X Marital Status	1.23	1	1.23	0.40
3-Way Interaction				
Training Mode X Gender X Marital Status	2.83	1	2.83	0.91
Within-Groups	1558.65	503	3.10	
TOTAL	1851.64	510		

* *Significant at 0.05 level.*

** *Significant at 0.01 level*

Table 4.140: Mean scores of training mode, gender and marital status on Academic Background (Main Effects)

Variables	Training Mode		Gender		Marital Status	
	Distance	Face to Face	Female	Male	Married	Unmarried
Number of Respondents	252	259	240	271	242	269
Mean Score	7.91	9.04	9.07	7.97	8.39	8.57

Table 4.141: Mean scores on Academic Background by Training Mode and Gender.

	Training Modes	
	Face-to-Face Mode	Distance Mode
Female	9.48 (N=144)	8.46 (N=96)
Male	8.50 (N=115)	7.58 (N=156)

Table 4.142: Mean scores on Academic Background by Training Mode and Marital Status

	Training Modes	
	Face-to-Face Mode	Distance Mode
Married	9.44 (N=85)	7.82 (N=157)
Unmarried	8.85 (N=174)	8.06 (N=95)

Table 4.143: Mean scores on Academic Background by Gender and Marital Status

	Married	Unmarried
Female	9.11 (N=108)	9.04 (N=132)
Male	7.81 (N=134)	8.12 (N=137)

Table 4.144: Mean scores on Academic Background by Training Mode, Gender and Marital Status

	Face-to-Face mode		Distance mode	
	Male	**Female**	**Male**	**Female**
Married	8.65 (N=34)	9.96 (N=51)	7.52 (N=100)	8.35 (N=57)
Unmarried	8.43 (N=81)	9.22 (N=93)	7.68 (N=56)	8.62 (N=39)

Table 4.139 shows that over-all F-ratio (13.51) is significant at 0.01 level showing that between all groups differences on academic background are significant at 0.01 level and leads to the conclusion that all the eight groups do not come from similar academic background. The main effect related to 'training mode' and 'gender' is significant at 0.01 level, but the main effect of the 'marital status' is not significant. It means that choice of training mode is influenced by the academic background of the trainees.

The mean scores of teacher trainees under face-to-face mode (9.04) and distance mode (7.91) are significantly different on academic background, the mean score of face-to-face teacher trainees being higher than that of DE mode. It leads to the conclusion that, in general, the face-to-face mode of training attracts candidates with better academic qualification (background) than the DE mode.

Gender also has a significant main effect on academic background with F-ratio of 34.66 at 0.01 level. It can be seen from table 4.140 that mean score of female trainees is higher than that of male trainees. So, it can be safely concluded that female trainees, in general, have better academic background than male respondents irrespective of the training mode.

Academic background of married and unmarried trainees is the same irrespective of the gender and mode of training as the F-ratio 0.92 is not significant. It can be concluded that marital status has no relationship on the academic background of teacher trainees.

Two-Way Interactions: Table 4.139 shows that F-ratio (0.18) of the interaction of training mode and gender in relation to academic background is not significant. The interaction effect of training mode and marital status with respect to academic background was found to be significant with an F-value of 4.21. The results (Table 4.142) show that in the DE mode unmarried candidates had better academic background than married ones. But, in the face-to-face mode, married candidates had better academic background. There exists no significant interaction of gender and marital status with respect to academic background as F-value (0.40) is not significant at both 0.01 and 0.05 level.

Three-Way Interaction of the variables training mode, gender and marital status in relation to the academic background of teacher trainees was not significant as indicated by the F-ratio (0.91). The main effects of training mode and gender were significant and 2-way interaction of Training Mode X Marital Status was also significant. But, the 3-way interaction of training mode gender, and marital status was not significant. Thus, the null hypothesis 2.20 was partially accepted.

The overall results lead to the conclusion that, as far as academic background of trainees is concerned, Face-to-Face mode enrolls trainees with better academic background than the DE mode. Also, the academic background of female teacher trainees is better than male teacher trainees. Unmarried teacher trainees have better academic background than married trainees under DE mode but the converse is true for face-to-face trainees.

Chapter 5

FINDINGS AND IMPLICATIONS

The previous four chapters have described the detailed methodology followed by the investigator in conducting the study. The theoretical and research context of the problem under investigation has been discussed in Chapter 1, and the research problem is precisely defined in Chapter 2. The descriptions of characteristics of the population, the technique of sampling and tools used have been discussed in Chapter 3. Also, the techniques of data analysis, which are complex, have been discussed in Chapter 4. After interpreting the result of analysis, the investigator came out with certain findings, which are being presented in this chapter. The implications of these findings for theory and practice of education, and for further researches in this area have also been discussed.

This study led to the following findings:

5.1 Findings related to distribution of scores on 16 PF scale in the populations of trainees under Face-to-Face and DE mode

1. The 95% confidence intervals for the mean scores on Factor A (Cool vs. Warm) in respect of population of trainees under face-to-face and DE modes were from 4.09 to 4.53 and from 4.77 to 5.77 respectively. It is evident that the two ranges are disjoint which shows that mean scores of the two populations of teacher trainees on this factor are different. This conclusion also corroborates with the findings of t-test for comparing the two sample means (page 80) on Factor A. The overall conclusion is that ***DE mode teacher trainees were more warm, outgoing, good-natured and emotionally expressive than those under face-to-face mode.***

However, the use of ANOVA (page 103) showed that the male teacher trainees were more good-natured than the female trainees. Married and unmarried trainees were equally cool or warm. It also showed that training mode and gender interact significantly in determining scores on factor A. The male teacher trainees under face-to-face and distance mode were more warm, good-natured and easy-going than their female counterparts under face-to-face and distance mode. The interaction

effect of gender and marital status was significant. Married female trainees were more warm, easygoing and adaptable than unmarried female trainees. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor A was not significant.

Majority of teacher trainees under DE mode are mature in-service teachers with minimum experience of two years in teaching which makes them more warm, outgoing, good-natured and emotionally expressive than teacher trainees under face-to-face mode. Thus, for developing qualities related to factor A, DE is more appropriate than face-to-face mode of training.

2. The 95% confidence intervals for mean scores on Factor B (Concrete thinking vs. Abstract thinking) in respect of face-to-face and DE mode trainees were respectively from 4.37 to 4.91 and from 3.91 to 4.39. As evident from the figures the two intervals overlap but the area of overlapping is very small. However, the t-test used to compare the two means on factor B (page 81) shows that ***face-to-face teacher trainees were more intelligent than their counterparts in the distance mode***. The regular trainees were more quick to grasp ideas and fast learner as compared to distance trainees.

However, the use of ANOVA (page 107) showed that female and male teacher trainees were of equal intelligence. Married and unmarried trainees were also equal on abstract and concrete thinking. Interaction of Training Mode X Gender and Gender X Marital Status were not significant but training mode and marital status interact significantly in determining scores on factor B. Married trainees under DE mode were more intelligent than unmarried trainees but the converse was true for face-to-face trainees. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor B was not significant.

The overall conclusion is that face-to-face mode attracts more intelligent teacher trainees in comparison to DE mode.

3. The 95% confidence intervals for the mean scores on Factor C (Affected by feelings vs. Emotionally stable) in respect of population of trainees under face-to-face and DE modes were from 4.68 to 5.12 and from 3.76 to 4.42 respectively. It is evident that the two ranges are disjoint which shows that mean scores of the two populations of teacher trainees on this factor are different. This conclusion also corroborates with

the findings of t-test for comparing the two sample means (page 82) on Factor C. The overall conclusion is that ***face-to-face teacher trainees were emotionally more stable, mature and realistic about life than the distance teacher trainees.***

The findings of ANOVA (page 110) also corroborated the finding of t-test. It also revealed that female teacher trainees possessed more ego strength than male teacher trainees. Married and unmarried trainees were equally affected by feelings irrespective of their training mode and gender. Interactions of Training Mode X Gender and Gender X Marital Status were not significant but training mode and marital status interact significantly with respect to factor C. Unmarried trainees under DE mode were emotionally more stable than married trainees but under face-to-face mode, married teacher trainees were emotionally more stable than unmarried trainees. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor C was not significant.

Regular interaction and discussions with colleagues and teachers bring desirable changes in behavior and make an individual more realistic about life. Thus, for developing qualities related to factor C, face-to-face mode is more appropriate than DE mode of training.

4. The evidence shows that 95% confidence limits for the mean scores on factor E (Submissive vs. Dominant) for face-to-face and DE mode trainees were from 4.94 to 5.34 and from 4.47 to 4.95 respectively. In this case, the two confidence intervals slightly over-lap showing that there is marginal difference in factor E of trainees under the two modes of training, the face-to-face mode teacher trainees being more assertive, aggressive and dominant than the DE mode trainees. This result has also been confirmed by t-test for comparing the mean scores on factor E for the two sample groups (page 83). This shows that the ***Face-to-Face mode enrolled more aggressive and dominant teacher trainees than the DE mode.***

The ANOVA (page 113) conducted on above samples revealed that female teacher trainees were more competitive than male teacher trainees. Married and unmarried trainees irrespective of training mode and gender were equally submissive or dominant. Interactions of Training Mode X Gender, Training Mode X Marital Status and Gender X Marital Status were not significant. Three-Way Interaction of the

variables training mode, gender and marital status in relation to factor E was not significant.

5. The 95% confidence interval for mean scores on factor F (Sober vs. Enthusiastic) in respect of face-to-face and DE mode trainees were found to be from 3.29 to 3.65 and from 4.05 to 4.53 respectively. These confidence intervals are disjoint showing that DE mode teacher trainees were more enthusiastic and expressive than teacher trainees under face-to-face mode. The t-test used to compare the mean scores on factor F for the two groups also showed (page 84) that ***teacher trainees under DE mode were significantly more enthusiastic and spontaneous than those under face-to-face mode.***

However, the findings of ANOVA (page 116) revealed that male trainees possessed more spontaneous behavior than female trainees. Married and unmarried trainees were equally sober or enthusiastic. The use of ANOVA also showed that training mode and gender interact significantly in determining scores on factor F. DE mode teacher trainees were more enthusiastic and cheerful than face-to-face mode teacher trainees, but this difference was more pronounced between male trainees of both the modes. Moreover, the interaction of gender and marital status showed that female married trainees were more talkative, heedless and expressive than unmarried female trainees whereas unmarried male trainees were more active and carefree than married male trainees. Three-Way Interaction of the variables training mode, gender and marital status in relation to Factor F was not significant.

DE mode teacher trainees especially males are involved in various activities related to their job and family which makes them comparatively more enthusiastic and spontaneous than their regular counterparts. Female teacher trainees become more talkative and expressive due to their exposure after marriage. Thus, for developing qualities related to factor F, DE is more appropriate than face-to-face mode of training.

6. The 95% confidence intervals for the mean scores on Factor G (Expedient vs. Conscientious) in respect of population of trainees under face-to-face and DE modes were from 5.70 to 6.10 and from 3.83 to 4.31 respectively. It is evident that the two ranges are disjoint which shows that mean scores of the two populations of teacher trainees on this factor are different. This conclusion also corroborates with the

findings of t-test for comparing the two sample means (page 85) on Factor G. The overall conclusion is that ***face-to-face mode teacher trainees were more conforming and moralistic than their distance counterparts.***

However, the use of ANOVA (page 119) showed that there was no influence of gender and marital status on factor G. Both female and male teacher trainees under face-to-face mode were more conscientious, conforming, moralistic and rule-bound than the female and male teacher trainees under the distance mode. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor G was not significant. Thus, for developing morals and respect towards rules, face-to-face mode is more appropriate than DE mode of training.

Face-to-Face mode of education promotes friendly and social learning environment which improves human relationships, group cohesiveness and make the students more conforming and moralistic than DE mode students. Thus, for developing qualities related to factor G, DE is more appropriate than face-to-face mode of training.

7. The 95% confidence intervals for mean scores on factor H (Shy vs. Bold) in respect of face-to-face and DE mode trainees were respectively from 5.00 to 5.36 and from 5.21 to 5.57. As evident from the figures the two intervals overlap and are equal for both face-to-face and DE mode trainees. The t-test used to compare the two means on factor H for the two groups also showed (page 86) that the trainees under face-to-face mode and DE mode did not differ significantly. ***Both the groups were equally shy/ bold.***

However, the ANOVA (page 122) showed that male teacher trainees were more bold and venturesome than female teacher trainees but married and unmarried teacher trainees were equally shy or bold. It also showed that training mode and gender interact significantly in determining scores on factor H. DE mode female trainees were more bold and venturesome than face-to-face female trainees but male trainees under face-to-face mode were more bold and venturesome than DE male trainees. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor H (Shy vs. Bold) was not significant.

Bold and venturesome behavior of DE female trainees may be due to their continuous interaction in their jobs and also majority of DE trainees are married and older in age than face-to-face trainees.

8. The evidence shows that 95% confidence limits for the mean scores on factor I (Tough-minded vs. Tender-minded) for face-to-face and DE mode trainees were found to be from 3.57 to 4.11 and from 4.72 to 5.20 respectively. In this case, the two confidence intervals are disjoint (non-over-lapping) showing that there is marked difference in factor I of trainees under the two modes of training, the mean score of DE mode trainees being more than the face-to-face trainees. This result has also been confirmed by t-test for comparing the mean scores on factor I for the two sample groups (page 87). This shows that ***DE mode teacher trainees were more tender-minded and emotionally sensitive than the face-to-face teacher trainees.***

It was confirmed from the findings of ANOVA (page 125) that male teacher trainees were more intuitive and refined than female teacher trainees. Married and unmarried trainees were equally tough-minded or tender-minded. However, training mode and gender interact significantly in determining scores on factor I. While DE mode teacher trainees were more sensitive than face-to-face trainees, but the difference was more noticeable in case of female trainees. The difference between the male trainees under both the modes was marginal. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor I of was not significant.

Thus, for developing qualities related to Factor I, DE is more appropriate than face-to-face mode of training.

9. The 95% confidence interval for mean scores on factor L (Trusting vs. Suspicious) in respect of face-to-face and DE mode trainees were found to be from 3.84 to 4.38 and from 5.48 to 5.92 respectively. These confidence intervals are disjoint which shows that mean scores of the two populations of teacher trainees on this factor are different. Thus, ***DE mode teacher trainees were more suspicious and doubtful than those under face-to-face mode trainees***. The t-test used to compare the mean score on factor L for the two groups also showed (page 88) that scores on factor L of DE mode trainees were significantly higher than those under face-to-face mode.

The findings of ANOVA (page 128) also showed that female teacher trainees possessed more distrustful behavior than male trainees. Married and unmarried trainees irrespective of their training mode and gender were equally trusting or suspicious. However, interaction of Training mode X Gender and Training Mode X Marital Status were not significant but Gender and Marital Status interact significantly. Married female and male trainees were more suspicious than unmarried female and male trainees. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor L was not significant.

DE programmes have been used to train teachers with differing backgrounds at a variety of different levels and for different purposes. Under DE mode, methods of teaching depends on course material and limited contact programmes which may make them more suspicious and doubtful regarding their educational programmes. Thus, for developing qualities related to factor L, face-to-face is more appropriate than DE mode of training.

10. The evidence shows that 95% confidence limits for the mean scores on factor M (Practical vs. Imaginative) for face-to-face and DE mode trainees were found to be from 3.65 to 4.31 and from 4.56 to 4.96 respectively. In this case, the two confidence intervals are disjoint (non-over-lapping) showing that there is marked difference in trainees under the two modes of training with respect to factor M. ***DE mode teacher trainees were more imaginative and absent minded than those under face-to-face mode***. This result has also been confirmed by t-test for comparing the mean scores on factor M for the two sample groups (page 89).

The findings of ANOVA (page 131) revealed that female teacher trainees were more absorbed in thought than male teacher trainees. Female teacher trainees under face-to-face mode were more imaginative and impractical than distance female trainees whereas male teacher trainees under distance mode were more absent-minded than face-to-face male trainees. Unmarried trainees were more imaginative than married trainees under distance mode whereas married teacher trainees under face-to-face mode were more imaginative than unmarried trainees under the same mode. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor M was not significant.

Though, teaching practice is a common feature of teacher training course, it is poorly conceived, inadequately organized and under resourced in many DE programmes *(Dove, 1986).* It makes DE mode trainees more imaginative and absent-minded than the face-to-face trainees. Thus, face-to-face mode is a better option to make teacher trainees more practical rather than imaginative.

11. The 95% confidence intervals for the mean scores on Factor N (Forthright vs. Shrewd) in respect of population of trainees under face-to-face and DE modes were from 5.88 to 6.42 and from 4.77 to 5.17 respectively. It is evident that the two ranges are disjoint which shows that mean scores of the two populations of teacher trainees on this factor are different. This conclusion also corroborates with the findings on t-test for comparing the two sample means (page 90) on Factor N. The overall conclusion is that ***face-to-face mode teacher trainees were more shrewd and socially aware than those under DE mode.***

However, the use of ANOVA (page 134) showed that female teacher trainees possessed more polished behavior than male trainees. Unmarried teacher trainees, in general, were less sentimental than their married counterparts. Interaction of Training Mode X Gender, Training Mode X Marital Status and Gender X Marital Status in respect of factor N were not significant. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor N was not significant.

It leads to the conclusion that face-to-face mode is a better choice than DE mode as far as social awareness is concerned.

12. The 95% confidence interval for mean scores on factor O (Self-assured vs. Apprehensive) in respect of face-to-face and DE mode trainees were found to be from 5.73 to 6.17 and from 4.80 to 5.28 respectively. These confidence intervals are disjoint showing that DE mode teacher trainees had higher mean score on factor O than face-to-face mode trainees. The t-test used to compare the mean score on factor O for the two groups also showed (page 91) that ***face-to-face mode teacher trainees were more apprehensive and insecure than their distance counterparts.***

However, the findings of ANOVA (page 137) revealed that there was no influence of gender and marital status on factor O. Interaction of Training Mode X Gender, Training Mode X Marital Status and Gender X Marital Status in respect of

factor O were not significant. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor O was not significant.

13. The evidence shows that 95% confidence limits for the mean scores on factor Q_1 (Conservative vs. Experimenting) for face-to-face and DE mode trainees were found to be from 6.08 to 6.52 and from 5.20 to 5.68 respectively. In this case, the two confidence intervals are disjoint (non-over-lapping) showing that there is marked difference in factor Q_1 of trainees under the two modes of training, the mean score on factor Q_1 of face-to-face teacher trainees being higher than the DE mode trainees. This result has also been confirmed by t-test for comparing the mean scores on factor Q_1 for the two sample groups (page 92). This shows that the ***face-to-face mode teacher trainees were more experimenting than the DE mode teacher trainees.***

The findings of ANOVA (page 140) showed that the face-to-face mode teacher trainees were more experimenting than the DE mode teacher trainees but, the difference was appreciable between the male trainees of both the modes. Female teacher trainees were more liberal and open to change in comparison to male teacher trainees irrespective of their training mode. Married and unmarried teacher trainees were equally conservative or experimenting. Interaction of Training Mode X Gender, Training Mode X Marital Status and Gender X Marital Status in respect of factor Q_1were not significant. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor Q_1 was not significant.

The level of instructor involvement is perhaps one of the most defining differences between face-to-face and DE mode. In face-to-face mode, the instructor generally delivers the content live and interacts with the students both in and outside class meeting whereas in DE programme the level of instructor involvement is very low. This may be the reason for more experimenting nature of face-to-face trainees in comparison to DE mode trainees.

14. The 95% confidence intervals for the mean scores on Factor Q_2 (Group-oriented vs. Self-sufficient) in respect of population of trainees under face-to-face and DE modes were from 4.09 to 4.53 and from 4.77 to 5.77 respectively. It is evident that the two ranges are disjoint which shows that mean scores of the two populations of teacher trainees on this factor are different. This conclusion also corroborates with the findings of t-test for comparing the two sample means (page 93) on Factor Q_2. The

overall conclusion is that ***face-to-face teacher trainees were more self-sufficient and resourceful in comparison to DE mode teacher trainees.***

However, the use of ANOVA (page 143) showed that the female trainees possessed more resourceful behavior than male trainees. Married and unmarried trainees were equally group-oriented or self-sufficient. Interaction of Training Mode X Gender, Training Mode X Marital Status and Gender X Marital Status in respect of factor Q_2 were not significant. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor Q_2 was not significant.

Teacher trainees under face-to-face mode interact frequently with their colleagues and instructors. They attend various seminars, lectures and learn different ways to enhance their teaching skills which make them more self-sufficient and resourceful than DE mode trainees. Thus, for developing qualities related to factor Q_2, face-to-face is more appropriate than DE mode of training.

15. The 95% confidence intervals for the mean scores on Factor Q_3 (Undisciplined self-conflict vs. Following self-image) in respect of population of trainees under face-to-face and DE modes were from 4.78 to 5.18 and from 4.02 to 4.50 respectively. It is evident that the two ranges are disjoint which shows that mean scores of the two populations of teacher trainees on this factor are different. This conclusion also corroborates with the findings on t-test for comparing the two sample means (page 95) on Factor Q_3. The overall conclusion is that ***face-to-face mode teacher trainees were socially more precise and have strong control of their emotions than their distance counterparts.***

However, the use of ANOVA (page 146) showed that the face-to-face mode teacher trainees were socially more precise than their distance counterparts but the difference was more noticeable between male trainees of two modes. Unmarried teacher trainees were found to have stronger control of their emotions than their married counterparts. Three-Way Interaction of the variables training mode, gender and marital status in relation to factor Q_3 was not significant.

Majority of teacher trainees under face-to-face mode come from lower age group than DE mode trainees. Regular trainees are generally, not involved in familial and social obligations which make them socially precise and strong control on their

emotions. Thus, for developing qualities related to factor Q_3, face-to-face is more appropriate than DE mode of training.

16. The evidence shows that 95% confidence limits for the mean scores on factor Q_4 (Relaxed vs. Tense) for face-to-face and DE mode trainees were found to be from 4.76 to 5.12 and from 5.12 to 5.60 respectively. In this case, the two confidence intervals are disjoint (non-over-lapping) showing that there is marked difference in factor Q_4 of trainees under the two modes of training. This result has also been confirmed by t-test for comparing the mean scores on factor Q_4 for the two sample groups (page 96). This shows that ***DE mode teacher trainees were more tense and frustrated than face-to-face mode teacher trainees.***

However, the use of ANOVA (page 149) showed that the teacher trainees under two modes did not differ significantly. But, it was found that male teacher trainees were more tense and frustrated than female trainees. Married trainees under distance mode were more restless and inpatient than unmarried trainees whereas unmarried teacher trainees under face-to-face mode were more tense and frustrated. Married female and male teacher trainees were more tense and frustrated than unmarried female and male trainees.

Majority of DE mode trainees are married and involved in service/jobs. They encountered various problems related to job, social and personal life which make them more tense and frustrated. Thus, for developing qualities related to factor Q_4, face-to-face is more appropriate than DE mode of training.

5.2 Findings related to distribution of Intelligence scores in the populations of trainees under Face-to-Face and DE mode

The evidence shows that 95% confidence limits for the mean intelligence scores for face-to-face and DE mode trainees were found to be from 41.89 to 43.41 and from 34.58 to 37.42 respectively. In this case, the two confidence intervals are disjoint (non-over-lapping) showing that there is marked difference in intelligence level of trainees under the two modes of training, the intelligence level of face-to-face teacher trainees being higher than the DE mode trainees. This result has also been confirmed by t-test for comparing the mean intelligence scores for the two sample groups (page 97). This shows that the ***Face-to-Face mode attracts brighter students than the DE mode students as far as intelligence level is concerned.***

Main effect of training mode on intelligence level also supported the above finding. ANOVA (page 153) showed that intelligence level of female and male teacher trainees was equal but unmarried trainees were found to have higher intelligence level than the married trainees irrespective of their training mode and gender. Interactions of Training Mode X Gender and Gender X Marital Status were not significant but Training Mode X Marital Status interact significantly in determining scores on intelligence. Unmarried trainees under both the modes were found to have higher intelligence level than the married trainees but this difference was more noticeable between married and unmarried trainees under DE mode. Three-Way Interaction of the variables training mode, gender and marital status in relation to the general intelligence level was not significant.

The difference in the intelligence level of face-to-face teacher trainees and their counterparts in distance education is understandable. It may be due to the reason that face-to-face trainees come from continuous courses whereas DE mode trainees have reassumed their studies after an interval. Married and unmarried trainees may differ in their intelligence level due to their social-personal activities and family obligations. However, *Singh and Chaturvedi (1996)* reported that off-campus students scored higher on intelligence test than their on-campus counterparts.

5.3 Findings related to distribution of Professional Attitude scores in the populations of trainees under Face-to-Face and DE mode

The 95% confidence intervals for mean scores on professional attitude in respect of face-to-face and DE mode trainees were respectively from 3.59 to 5.24 and from 4.51 to 4.71. As evident from the figures the two intervals overlap and the one for face-to-face mode is wider (less reliable) than that for DE mode trainees. However, the t-test used to compare the two means on professional attitude (page 98) shows that ***face-to-face mode of training develops a more favourable attitude towards teaching than the DE mode.***

The main effect of training mode also showed that regular trainees develop more favourable attitude in comparison to their counterparts. Professional attitude of female and male teacher trainees was same. Married and unmarried trainees did not differ significantly on professional attitude. However, the use of ANOVA (page 156) showed that interaction of Training Mode X Gender, Training Mode X Marital Status

and Gender X Marital Status was not significant. Three-Way Interaction of the variables training mode, gender and marital status in relation to the teaching attitude was also not significant.

The attitudinal difference towards teaching profession between face-to-face and DE mode teacher trainees may be due to the fact that during the B.Ed course, face-to-face trainees have a regular association and interaction with the teacher-educators who keep on developing their attitudes towards teaching on day to day basis but DE mode trainees depend mainly on their course material and have comparatively less interactions with their teachers and colleagues. In consonance with the results of the present study, in the earlier studies also, *Garg and Gakhar (2011)* and *Ramchandran (1991)* found that face-to-face teacher trainees have more favorable attitude towards teaching than the DE mode trainees.

5.4 Findings related to distribution of Socio-Economic Background scores in the populations of trainees under Face-to-Face and DE mode

The 95% confidence interval for mean scores on socio-economic background in respect of face-to-face and DE mode trainees were found to be from 16.15 to 17.71 and from 18.54 to 20.66 respectively. These confidence intervals are disjoint showing that DE mode teacher trainees had a better/higher socio-economic background than face-to-face mode trainees. The t-test used to compare the mean score on SES for the two groups also showed (page 99) that ***socio-economic background of trainees under DE mode was significantly higher than those under face-to-face mode.***

The main effects of ANOVA (page 159) revealed that female trainees come from more well-to-do families than the male teacher trainees. Unmarried trainees come from better socio-economic background the married trainees. However, the interactions of ANOVA leads to the conclusion that under face-to-face mode, male teacher trainees come from better socio-economic background than female trainees, while in the DE mode female trainees female trainees come from better family background than the male trainees. The face-to-face mode mostly attracts unmarried candidate for training while in the DE mode this effect is marginal. Three-Way Interaction of the variables training mode, gender and marital status in relation to the socio-economic background of teacher trainees was not significant.

The result of significant difference between the two groups of trainees on socio-economic status may be due to the fact that all the distance trainees are in job and also have income from other members of the family as most of them are married, while B.Ed face-to-face trainees being full-time learners are dependent on their guardians. However, *Garg and Gakhar (2011)* found no significant difference in the socio-economic background of teacher trainees under both the modes.

5.5 Findings related to distribution of Academic Background scores in the populations of trainees under Face-to-Face and DE mode

The 95% confidence interval for mean scores on academic background in respect of face-to-face and DE mode trainees were found to be from 8.82 to 9.26 and from 7.67 to 8.15 respectively. These confidence intervals are disjoint showing that face-to-face mode teacher trainees had a better/higher academic background than DE mode teacher trainees. The t-test used to compare the mean scores on academic background for the two groups of trainees also showed (page 100) that ***academic background of teacher trainees under face-to-face mode was significantly better than those under DE mode.*** Female teachers were found to have better academic background than male trainees.

However, the use of ANOVA (page 162) showed that the interaction of Training Mode X Gender and Gender X Marital Status was not significant but training mode and marital status interact significantly. Under DE mode, unmarried candidate had better academic background than married ones but under face-to-face mode married candidate had better academic background than unmarried candidates.

5.6 Educational Implications

Researches of all kinds are directed towards the goal of discovering new knowledge about nature which might be utilized for making the human living more comfortable. A research study can be considered relevant and meaningful if the findings of it are useful to solve that particular problem and also helpful in solving related problems. In the context of distance mode of education nearly all research investigations are directed towards generating new knowledge which might be helpful in improving teaching learning practices, teacher trainees related problems, admission procedures, curriculum etc.

A research study must help in this objective by providing innovative theories related to distance mode of education. In the present study, the investigator has made an attempt to study certain selected variables of teacher trainees under face-to-face and distance mode of education. Although the investigator does not claim to have made an exhaustive study of the problem in question, yet it is emphasized that various aspects of the problem have been examined as extensively and deeply as possible. The findings of this study have some important implication for distance mode teacher trainees in general, in curriculum planning, admission procedures etc. The findings also have some implication for further research in this field.

Some of the findings listed in the previous section are of extraordinary importance which call for some immediate measures to be taken for the distance mode teacher trainees.

(i) ***It is seen in previous chapter that DE mode teacher trainees are more warm, good-natured, enthusiastic and tender-minded than the face-to-face teacher trainees.*** It may be due to the fact, that DE mode teacher trainees are already in teaching profession and have certain duties and responsibilities towards their profession which brings positive change in their behavior. Teaching job reshapes the attitudes, remodels the habits and reconstitutes the personality of teacher. Measures should be taken to inculcate better habits among face-to-face students by including some relevant social activities in their curriculum.

(ii) ***Another related finding is that teacher trainees under DE mode are more suspicious, impractical, tense and frustrated than the teacher trainees under face-to-face mode.*** Regular trainees give more time and attention to their subjects. Their contact with teachers is frequent, sharing of knowledge in classroom is on regular basis so they have very clear concepts of different subjects. But, DE trainees get meager time to have a contact with their tutors. Therefore, their vision and understanding of subjects is very limited. One possible explanation of this finding is the background of DE mode teacher trainees. Mostly DE trainees are older in age, employed, in-charge of families, home-bound and ready to take responsibilities for outcomes. Understandably, the

needs of these adult learners are significantly different from those of traditional teenage students, thus it indicates the need for high flexibility in terms of learning 'anytime' and 'everywhere' contact component may be enhanced.

(iii) ***It is reported in findings that face-to-face teacher trainees are more assertive, moralistic and rule-bound than their distance counterparts.*** Environment of the institution plays a significant role in inculcating various qualities in an individual. Face-to-face trainees are in regular contact with their teachers and are bound to follow the norms of the institution. As far as intelligence level is concerned, regular trainees are more intelligent than their distance counterparts. Therefore, efforts should be made for DE mode teacher trainees to update their knowledge through regular intervals. It is also necessary to get effective and meaningful communication for revising the structure and effectiveness of distance education.

(iv) ***While comparing the trainees under the two modes on personality factors, it was found that regular trainees are more experimenting, apprehensive and diplomatic than their distance counterparts.*** It is possible that knowledge and skills can be taught more effectively in DE but the development of an idea or experiment may need more discussions and interactions with the instructor and other students. So, one needs to eliminate these communication barriers by increasing the ability of Internet access, student to student interactions, student to instructor interactions and student/instructor motivations. There should be an effective monitoring and evaluation mechanism to ensure the smooth working of study centres and PCP centres. It will make DE program more effective, interactive, and even more attractive.

(v) ***Teacher trainees under the two modes of training are compared on personality factors. It is found that distance mode teacher trainees are more imaginative and absent-minded than regular trainees.*** There is a need to have faculty of education for ensuring professional inputs and quality maintenance. B.Ed programme being a professional programme, it should emphasise development of skills and

competencies through practical activities. Continuous and comprehensive evaluation is needed for practical work like school-based practicals and practice teaching. The practice teaching is to be organized throughout the academic year, so that it can provide complete and comprehensive school based experiences. Moreover, teachers should be encouraged for maximum utilization of modern technology to make their lecture more effective and also emphasize the students to utilize these aids for their presentations. Institutions should have a proper networking for wide and rapid delivery of materials. This can be done by optimum utilization of postal networks, modern and indigenous technologies, proper selection of time to broadcast/telecast of the programme, awareness campaigns, advertisements and collaborating with local agencies.

(vi) ***It is seen in previous chapter that face-to-face teacher trainees are more intelligent and have favourable attitude towards teaching in comparison to distance mode teacher trainees.*** Since academically poor students are coming to the distance mode B.Ed course, the major implication for the practice is that adequate course content should be added in the distance mode course for the inculcation of more positive attitude. This also implies that the course content and material for the two modes of training should not be the same, because the two courses differ widely in terms of the delivery. It may be possible that certain type of learning objectives may not be amenable to satisfactory level of achievement through distance mode. The quality of a distance-education programme is likely to depend on arrangements for teaching practice and its assessment where it forms part of the curriculum. Therefore, an appropriate system of assessment and the use of combination of teaching media is necessary to inculcate teaching attitude among DE trainees.

(vii) ***It is also reported in earlier findings that face-to-face teacher trainees are more self-sufficient and resourceful than DE mode trainees.*** As many evaluations acknowledge, large number of DE trainees on programmes are studying while working, with little local

face-to-face support or supervision. Other local level difficulties are: delays in delivering study materials, difficulties in recruiting appropriate local tuitors and teaching practice supervisors, low participation in tutorial sessions which make them comparatively less sufficient and resourceful than face-to-face trainees. By overcoming above difficulties, DE can lead to active learning, learner-centered approaches, the growth and personal development of individual learners rather than the transmission of information alone.

(viii) ***An important finding is that the DE mode trainees have significantly better socio-economic background than the teacher trainees of face-to-face mode.*** The result of significant difference between the two groups of trainees on socio-economic status may be due to the fact that all the distance trainees are in job and also have income from other members of the family as most of them are married, while B.Ed regular trainees being a full-time learners are dependent on their guardians.

(ix) ***It is clear from the previous findings that students with better academic background opt face-to-face mode in comparision to distance mode.*** Admission criteria to B.Ed programme should be followed strictly and consistently which means that if the B.Ed programme is to be designed for in-service teacher with minimum of 2 years experience, it should be strictly followed while admitting students. The enrollment of students should be limited keeping in view the organizational capacity for programme delivery of institutes and the Open Universities where the enrollment on mass scale affects the quality of teachers education programmes. If academic and physical inputs are sufficient and the state needs more trained teachers, number of seats can be increased.

(x) ***Male teacher trainees, on one hand, are more easy-going, spontaneous, bold and refined than the female teacher trainees but, on the other hand, they are more tense and frustrated than their female counterparts. Another finding leads to the result that female trainees are more absorbed in thought, have more ego strength, more polished, competitive and distrustful behavior than the male teacher***

trainees. Due to prevailing traditional environment and gender discrimination, most of the women are unable to continue their studies through conventional courses in India. Infact, women attracted towards DE are either highly burdened housewives, employed individuals or other neglected who wish to continue their education. Hence, to promote DE among women students, DE must also pay attention to the personal problems of women.

(xi) ***Another important finding is that there is no significant difference in the intelligence level of male and female teacher trainees.*** It can be an indication that female trainees are no way inferior to male trainees in respect of cognitive abilities and are getting better- with the changing era of education. Government should work for the upliftment of women candidates and consequently to increase their enrollment in distance as well as face-to-face mode.

(xii) ***Professional attitude of male and female teacher trainees is same irrespective of their training mode.*** It indicates that there should not be any gender discrimination in respect of teaching jobs. It also highlights that DE is a boon for women who can benefit from these education systems and succeed in this male dominated society.

(xiii) ***One more important finding is that female teacher trainees have better socio-economic and academic background than male teacher trainees irrespective of their training mode.*** Female candidates appear to be ready to cope with the problems with them to make their leaning goes on smoothly and leads to the goal that they have set for themselves. Thus, DE can really act as a boon for all those female candidates who have thirst for furthering their higher education but missed it for a variety of personal, social or cultural factor.

(xiv) In some countries DE is being given a coherent, recognized and supported role within government policies in education and communications. The dramatic expansion in the use of new information and communication technologies has brought DE centre-stage. DE has been used to provide appreciable programmes in teacher

education: initial teacher education, continuing professional development, to reorient teachers for curriculum reforms and to support career development.

(xv) Distance Education is a helping hand to conventional mode in teacher education as it :

- provides formal and non-formal programmes and activities extending teachers' knowledge, skills and expertise throughout a teacher's working life.
- reorients teachers to new teaching strategies and the use of information technology.
- conducts programmes to extend the careers of qualified teachers.
- raises awareness, understanding and interest among teachers and other educators in the community.

Implications for Further Research

(i) Due to limitation of time and certain other factors only one University of Distance mode and one of Conventional mode was taken by researcher for comparing students trained through distance and conventional mode. Hence, the results of this study may not be generalized over the entire prospective teachers which are being trained through distance education mode. Thus, there is a need to replicate this study on a national level to corroborate the findings of the study.

(ii) In this study, students in the two mode of teacher training were compared only in relation to five dependent variables which were personality factors, general intelligence, professional attitude, socio-economic and academic background. Further research should compare the classroom behavior (which is very important aspect of teacher training programme) of the teachers trained through distance mode and traditional mode must be undertaken.

(iii) It can be safely said from the conclusions of this study that if the distance mode of training teachers is to be continued for the training of in-service teachers there is a serious and urgent need to revisit and

rethink about the course content and delivery modes of courses, so as to make the them more effective for training quality teachers.

(iv) Since the significant sex relationship was observed in development of certain personality factors, further research should be attempt to clarify sex related issues in both modes of teacher education.

(v) Those aspects and factors which favour or disfavour the development of favourable attitude and personality factors in B.Ed students of rural and urban background should be studied through further research.

APPENDIX A
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APPENDIX B
QUESTIONNAIRES

1967-68 EDITION

FORM A

16 PF

WHAT TO DO : Inside this booklet are some questions to see what attitudes and interests you have. There are no "right" and "wrong" answers because everyone has the right to his own views. To be able to get the best advice from your results, you will want to answer them exactly and truly.

If a separate "Answer Sheet" has not been given to you, turn this booklet over and tear off the Answer Sheet on the back page.

Write your name and all other information asked for on the top line of the Answer Sheet.

First you should answer the four sample questions below so that you can see whether you need to ask anything before starting. Although you are to read the questions in this booklet, you must record your answers on the answer sheet (alongside the same number as in the booklet).

There are three possible answers to each question. Read the following examples and mark your answers at the top of your answer sheet where it says "Examples". Fill in the left-hand box if your answer choice is the "a" answer, in the middle box if your answer choice is the "b" answer, and in the right-hand box if you choose the "c" answer.

EXAMPLES :

1. I like to watch team games.

   a. yes, b. occasionally, c. no.

2. I prefer people who :

   a. are reserved,

   b. (are) in between,

   c. make friends quickly.

3. Money cannot bring happiness.

   a. yes (true), b. in between, c. no (false).

4. Woman is to child as cat is to :

   a. kitten, b. dog, c. boy.

In the last example there *is* a right answer—kitten. But there are very few such reasoning items.

Ask *now* if anything is not clear. The examiner will tell you in a moment to turn the page and start.

When you answer, keep these four points in mind :

1. You are asked not to spend time pondering. Give the first, natural answer as it comes to you. Of course, the questions are too short to give you all the particulars you would sometimes like to have. For instance, the above question asks you about "team games" and you might be fonder of football than basketball. But you are to reply for the average game," or to strike an average in situations of the kind stated. Give the best answer you can at a rate not slower than five or six a minute. You should finish in a little more than half an hour.
2. Try not to fall back on the middle, "uncertain" answers except when the answer at either end is really impossible for you—perhaps once every four or five questions.
3. Be sure not to skip anything, but answer every question, somehow. Some may not apply to you very well, but give your best guess. Some may seem personal ; but remember that the answer sheets are kept confidential and cannot be scored without a special stencil key. Answers to particular questions are not inspected.
4. Answer as honestly as possible what is true of you. Do not merely mark what seems "the right thing to say" to impress the examiner.

DO NOT TURN PAGE UNTIL TOLD TO DO SO

1. I have the instructions for this test clearly in mind.
   a. yes, b. uncertain, c. no.

2. I am ready to answer each question as truthfully as possible.
   a. yes, b. uncertain, c. no.

3. *I would rather have a house:*
   a. in a sociable suburb,
   b. in between,
   c. alone in the deep woods.

4. I can find enough energy to face my difficulties.
   a. always, b. generally, c. seldom.

5. I feel a bit nervous of wild animals even when they are in strong cages.
   a. yes (true), b. uncertain, c. no (false).

6. I hold back from criticizing people and their ideas.
   a. yes. b. sometimes, c. no.

7. I make smart, sarcastic remarks to people if I think they deserve it.
   a. generally, b. sometimes, c. never.

8. I prefer semiclassical music to popular tunes.
   a. true, b. uncertain, c. false.

9. *If I saw two neighbors' children fighting, I would:*
   a. leave them to settle it,
   b. uncertain,
   c. reason with them.

10. On social occasions I:
    a. readily come forward,
    b. in between,
    c. prefer to stay quietly in the background.

11. It would be more interesting to be:
    a. a construction engineer,
    b. uncertain,
    c. a writer of plays.

12. I would rather stop in the street to watch an artist painting than listen to some people having a quarrel.
    a. true, b. uncertain, c. false.

13. I can generally put up with conceited people, even though they brag or show they think too well of themselves.
    a. yes, b. in between, c. no.

14. You can almost always notice on a man's face when he is dishonest.
    a. yes, b. in between, c. no.

15. It would be good for everyone if vacations (holidays) were longer and everyone *had* to take them.
    a. agree, b. uncertain, c. disagree.

16. I would rather take the gamble of a job with possibly large but uneven earnings, than one with a steady, small salary.
    a. yes, b. uncertain, c. no.

17. I talk about my feelings:
    a. only if necessary,
    b. in between,
    c. readily, whenever I have a chance.

18. Once in a while I have a sense of vague danger or sudden dread for reasons that I do not understand.
    a. yes, b. in between, c. no.

19. When criticized wrongly for something I did *not* do, I:
    a. have no feeling of guilt,
    b. in between,
    c. still feel a bit guilty.

20. Money can buy almost everything.
    a. yes, b. uncertain, c. no.

21. My decisions are governed more by my:
    a. heart,
    b. feelings and reason equally,
    c. head.

22. Most people would be happier if they lived more with their fellows and did the same *things as others.*
    a. yes, b. in between, c. no.

23. I occasionally get puzzled, when looking in a mirror, as to which is my right and left.
    a. true, b. uncertain, c. false.

24. When talking, I like:
    a. to say things, just as they occur to me,
    b. in between,
    c. to get my thoughts well organized first.

25. When something really makes me furious, I find I calm down again quite quickly.
    a. yes, b. in between,

(End, column 1 on answer sheet.)

26. With the same hours and pay, it would be more interesting to be:
a. a carpenter or cook,
b. uncertain,
c. a waiter in a good restaurant.

27. I have been elected to:
a. only a few offices,
b. several,
c. many offices.

28. "Spade" is to "dig" as "knife" is to:
a. sharp, b. cut, c. point.

29. I sometimes can't get to sleep because an idea keeps running through my mind.
a. true, b. uncertain, c. false.

30. In my personal life I reach the goals I set, almost all the time.
a. true, b. uncertain, c. false.

31. An out-dated law should be changed:
a. only after considerable discussion,
b. in between,
c. promptly.

32. I am uncomfortable when I work on a project requiring quick action affecting others.
a. true, b. in between, c. false.

33 Most of the people I know would rate me as an amusing talker.
a. yes, b. uncertain, c. no.

34. When I see "sloppy," untidy people, I:
a. just accept it,
b. in between,
c. get disgusted and annoyed.

35. I get slightly embarrassed if I suddenly become the focus of attention in a social group.
a. yes, b. in between, c. no.

36. I am always glad to join a large gathering, for example, a party, dance, or public meeting.
a. yes, b. in between, c. no.

37. In school I preferred (or prefer):
a. music,
b. uncertain,
c. handwork and crafts.

38. When I have been put in charge of something, I insist that my instructions are followed or else I resign.
a. yes, b. sometimes, c. no.

39. For parents, it is more important to:
a. help their children develop their affections,
b. in between,
c. teach their children how to control emotions.

40. In a group task I would rather:
a. try to improve arrangements,
b. in between,
c. keep the records and see that rules are followed.

41. I feel a need every now and then to engage in a tough physical activity.
a. yes, b. in between, c. no.

42. I would rather mix with polite people than rough, rebellious individuals.
a. yes, b. in between, c. no.

43. I feel terribly dejected when people criticize me in a group.
a. true, b. in between, c. false.

44. If I am called in by my boss, I:
a. make it a chance to ask for something I want,
b. in between,
c. fear I've done something wrong.

45. What this world needs is:
a. more steady and "solid" citizens,
b. uncertain,
c. more "idealists" with plans for a better world.

46. I am always keenly aware of attempts at propaganda in things I read.
a. yes, b. uncertain, c. no.

47. As a teenager, I joined in school sports:
a. occasionally,
b. fairly often,
c. a great deal.

48. I keep my room well organized, with things in known places almost all the time.
a. yes, b. in between, c. no.

49. I sometimes get in a state of tension and turmoil as I think of the day's happenings.
a. yes, b. in between, c. no.

50. I sometimes doubt whether people I am talking to are really interested in what I am saying.
a. yes, b. in between, c. no.

(End, column 2 on answer sheet.)

51. If I had to choose, I would rather be:
a. a forester,
b. uncertain,
c. a high school teacher.

52. For special holidays and birthdays, I:
a. like to give personal presents,
b. uncertain,
c. feel that buying presents is a bit of a nuisance.

53. "Tired" is to "work" as "proud" is to:
a. smile, b. success, c. happy.

54. Which of the following items is different in kind from the others?
a. candle, b. moon, c. electric light.

55. I have been let down by my friends:
a. hardly ever,
b. occasionally,
c. quite a lot.

56. I have some characteristics in which I feel definitely superior to most people.
a. yes, b. uncertain, c. no.

57. When I get upset, I try hard to hide my feelings from others.
a. true, b. in between, c. false.

58. I like to go out to a show or entertainment:
a. more than once a week (more than average),
b. about once a week (average),
c. less than once a week (less than average).

59. I think that plenty of freedom is more important than good manners and respect for the law.
a. true, b. uncertain, c. false.

60. I tend to keep quiet in the presence of senior persons (people of greater experience, age, or rank).
a. yes, b. in between, c. no.

61. I find it hard to address or recite to a large group.
a. yes, b. in between, c. no.

62. I have a good sense of direction (find it easy to tell which is North, South, East, or West) when in a strange place.
a. yes, b. in between, c. no.

63. If someone got mad at me, I would:
a. try to calm him down,
b. uncertain,
c. get irritated.

64. When I read an unfair magazine article, I am more inclined to forget it than to feel like "hitting back."
a. true, b. uncertain, c. false.

65. My memory tends to drop a lot of unimportant, trivial things, for example, names of streets or stores in town.
a. yes, b. in between, c. no.

66. I could enjoy the life of an animal doctor, handling disease and surgery of animals.
a. yes, b. in between, c. no.

67. I eat my food with gusto, not always carefully and properly as some people.
a. true, b. uncertain, c. false.

68. There are times when I don't feel in the right mood to see anyone.
a. very rarely,
b. in between,
c. quite often.

69. People sometimes warn me that I show my excitement in voice and manner too obviously.
a. yes, b. in between, c. no.

70. As a teenager, if I differed in opinion from my parents, I usually:
a. kept my own opinion,
b. in between,
c. accepted their authority.

71. I would prefer to have an office of my own, not sharing it with another person.
a. yes, b. uncertain, c. no.

72. I would rather enjoy life quietly in my own way than be admired for my achievements.
a. true, b. uncertain, c. false.

73. I feel mature in most things.
a. true, b. uncertain, c. false.

74. I find myself upset rather than helped by the kind of criticism that many people offer one.
a. often, b. occasionally, c. never.

75. I am always able to keep the expression of my feelings under exact control.
a. yes, b. in between, c. no.

(End, column 3 on answer sheet.)

76. In starting a useful invention, I would prefer:
a. working on it in the laboratory,
b. uncertain,
c. selling it to people.

77. "Surprise" is to "strange" as "fear" is to:
a. brave, b. anxious, c. terrible.

78. Which of the following fractions is not in the same class as the others?
a. 3/7, b. 3/9, c. 3/11.

79. Some people seem to ignore or avoid me, although I don't know why.
a. true, b. uncertain, c. false.

80. People treat me less reasonably than my good intentions deserve.
a. often, b. occasionally, c. never.

81. The use of foul language, even when it is not in a mixed group of men and women, still disgusts me.
a. yes, b. in between, c. no.

82. I have decidedly fewer friends than most people.
a. yes, b. in between, c. no.

83. I would hate to be where there wouldn't be a lot of people to talk to.
a. true, b. uncertain, c. false.

84. People sometimes call me careless even though they think I'm a likable person.
a. yes, b. in between, c. no.

85. "Stage-fright" in various social situations is something I have experienced:
a. quite often,
b. occasionally,
c. hardly ever.

86. When I am in a small group, I am content to sit back and let others do most of the talking.
a. yes, b. in between, c. no.

87. I prefer reading:
a. a realistic account of military or political battles,
b. uncertain,
c. a sensitive, imaginative novel.

88. When bossy people try to "push me around," I do just the opposite of what they wish.
a. yes, b. in between, c. no.

89. Business superiors or members of my family, as a rule, find fault with me only when there is real cause.
a. true, b. in between, c. false.

90. In streets or stores, I dislike the way some persons stare at people.
a. yes, b. in between, c. no.

91. On a long journey, I would prefer to:
a. read something profound, but interesting,
b. uncertain,
c. pass the time talking casually with a fellow passenger.

92. In a situation which may become dangerous, I believe in making a fuss and speaking up even if calmness and politeness are lost.
a. yes, b. in between, c. no.

93. If acquaintances treat me badly and show they dislike me:
a. it doesn't upset me a bit,
b. in between,
c. I tend to get downhearted.

94. I find it embarrassing to have praise or compliments bestowed on me.
a. yes, b. in between, c. no.

95. I would rather have a job with:
a. a fixed, certain salary,
b. in between,
c. a larger salary, which depended on my constantly persuading people I am worth it.

96. To keep informed, I like:
a. to discuss issues with people,
b. in between,
c. to rely on the actual news reports.

97. I like to take an active part in social affairs, committee work, etc.
a. yes, b. in between, c. no.

98. In carrying out a task, I am not satisfied unless even the minor details are given close attention.
a. true, b. in between, c. false.

99. Quite small setbacks occasionally irritate me too much.
a. yes, b. in between, c. no.

100. I am always a sound sleeper, never walking or talking in my sleep.
a. yes, b. in between, c. no.

(End, column 4 on answer sheet.)

101. It would be more interesting to work in a business:
a. talking to customers,
b. in between,
c. keeping office accounts and records.

102. "Size" is to "length" as "dishonest" is to
a. prison, b. sin, c. stealing.

103. AB is to dc as SR is to:
a. qp, b. pq, c. tu.

104. When people are unreasonable, I just:
a. keep quiet,
b. uncertain,
c. despise them.

105. If people talk loudly while I am listening to music, I:
a. can keep my mind on the music and not be bothered,
b. in between,
c. find it spoils my enjoyment and annoys me.

106. I think I am better described as:
a. polite and quiet,
b. in between,
c. forceful.

107. I attend social functions only when I have to, and stay away any other time.
a. yes, b. uncertain, c. no.

108. To be cautious and expect little is better than to be happy at heart, always expecting success.
a. true, b. uncertain, c. false.

109. In thinking of difficulties in my work, I:
a. try to plan ahead, before I meet them,
b. in between,
c. assume I can handle them when they come.

110. I find it easy to mingle among people at a social gathering.
a. true, b. uncertain, c. false.

111. When a bit of diplomacy and persuasion are needed to get people moving, I am generally the one asked to do it.
a. yes, b. in between, c. no.

112. It would be more interesting to be:
a. a guidance worker helping young people find jobs,
b. uncertain,
c. a manager in efficiency engineering.

113. If I am quite sure that a person is unjust or behaving selfishly, I show him up, even if it takes some trouble.
a. yes, b. in between, c no.

114. I sometimes make foolish remarks in fun, just to surprise people and see what they will say.
a. yes, b. in between, c. no.

115. I would enjoy being a newspaper writer on drama, concerts, opera, etc.
a. yes, b. uncertain, c. no

116. I never feel the urge to doodle and fidget when kept sitting still at a meeting.
a. true, b. uncertain, c. false.

117. If someone tells me something which I know is wrong, I am more likely to say to myself:
a. "He is a liar,"
b. in between,
c. "Apparently he is misinformed."

118. I feel some punishment is coming to me even when I have done nothing wrong.
a. often, b. occasionally, c. never.

119. The idea that sickness comes as much from mental as physical causes is much exaggerated.
a. yes, b. in between, c. no.

120. The pomp and splendor of any big state ceremony are things which should be preserved.
a. yes, b. in between, c. no.

121. It bothers me if people think I am being too unconventional or odd.
a. a lot, b. somewhat, c. not at all.

122. In constructing something I would rather work:
a. with a committee,
b. uncertain,
c. on my own.

123. I have periods when it's hard to stop a mood of self-pity.
a. often, b. occasionally, c. never.

124. Often I get angry with people too quickly.
a. yes, b. in between, c. no.

125. I can always change old habits without difficulty and without slipping back.
a. yes, b. in between c. no.

(End, column 5 on answer sheet.)

126. If the earnings were the same, I would rather be:
a. a lawyer,
b. uncertain,
c. a navigator or pilot.

127. "Better" is to "worst" as "slower" is to:
a. fast, b. best, c. quickest.

128. Which of the following should come next at the end of this row of letters: xooooxxoooxxx?
a. oxxx, b. ooxx, c. xooo.

129. When the time comes for something I have planned and looked forward to, I occasionally do not feel up to going.
a. true, b. in between, c. false.

130. I can work carefully on most things without being bothered by people making a lot of noise around me.
a. yes, b. in between, c. no.

131. I occasionally tell strangers things that seem to me important, regardless of whether they ask about them.
a. yes, b. in between, c. no.

132. I spend much of my spare time talking with friends about social events enjoyed in the past.
a. yes, b. in between, c. no.

133. I enjoy doing "daring," foolhardy things "just for fun."
a. yes, b. in between, c. no.

134. I find the sight of an untidy room very annoying.
a. yes, b. in between, c. no.

135. I consider myself a very sociable, outgoing person.
a. yes, b. in between, c. no.

136. In social contacts I:
a. show my emotions as I wish
b. in between,
c. keep my emotions to myself.

137. I enjoy music that is:
a. light, dry, and brisk,
b. in between,
c. emotional and sentimental.

138. I admire the beauty of a poem more than that of a well-made gun.
a. yes, b. uncertain, c. no.

139. If a good remark of mine is passed by, I:
a. let it go,
b. in between,
c. give people a chance to hear it again.

140. I would like to work as a probation officer with criminals on parole.
a. yes, b. in between, c. no.

141. One should be careful about mixing with all kinds of strangers, since there are dangers of infection and so on
a. yes, b. uncertain, c. no.

142. In traveling abroad, I would rather go on an expertly conducted tour than plan by myself the places I wish to visit.
a. yes, b. uncertain, c. no.

143. I am properly regarded as only a plodding, half-successful person.
a. yes, b. uncertain, c. no.

144. If people take advantage of my friendliness, I do not resent it and I soon forget.
a. true, b. uncertain, c. false.

145. If a heated argument developed between other members taking part in a group discussion, I would:
a. like to see a "winner,"
b. in between,
c. wish that it would be smoothed over.

146. I like to do my planning alone, without interruptions and suggestions from others.
a. yes, b. in between, c. no.

147. I sometimes let my actions get swayed by feelings of jealousy.
a. yes, b. in between, c. no.

148. I believe firmly "the boss may not always be right, but he always has the right to be boss."
a. yes, b. uncertain, c. no.

149. I get tense as I think of all the things lying ahead of me.
a. yes, b. sometimes, c. no.

150. If people shout suggestions when I'm playing a game, it doesn't upset me.
a. true, b. uncertain, c. false.

(End, column 6 on answer sheet.)

151. It would be more interesting to be:
a. an artist,
b. uncertain,
c. a secretary running a club.

152. Which of the following words does not properly belong with the others?
a. any, b. some, c. most.

153. "Flame" is to "heat" as "rose" is to:
a. thorn, b. red petals, c. scent.

154. I have vivid dreams, disturbing my sleep.
a. often,
b. occasionally,
c. practically never.

155. If the odds are really against something's being a success, I still believe in taking the risk.
a. yes, b. in between, c. no.

156. I like it when I know so well what the group has to do that I naturally become the one in command.
a. yes, b. in between, c. no.

157. I would rather dress with quiet correctness than with eye-catching personal style.
a. true, b. uncertain, c. false.

158. An evening with a quiet hobby appeals to me more than a lively party.
a. true, b. uncertain, c. false.

159. I close my mind to well-meant suggestions of others, even though I know I shouldn't.
a. occasionally, b. hardly ever, c. never.

160. I always make it a point, in deciding anything, to refer to basic rules of right and wrong.
a. yes, b. in between, c. no.

161. I somewhat dislike having a group watch me at work.
a. yes, b. in between, c. no.

162. Because it is not always possible to get things done by gradual, reasonable methods, it is sometimes necessary to use force.
a. true, b. in between, c. false.

163. In school I preferred (or prefer):
a. English,
b. uncertain,
c. mathematics or arithmetic.

164. I have sometimes been troubled by people's saying bad things about me behind my back, with no grounds at all.
a. yes, b. uncertain, c. no.

165. Talk with ordinary, habit-bound, conventional people:
a. is often quite interesting and has a lot to it,
b. in between,
c. annoys me because it deals with trifles and lacks depth.

166. Some things make me so angry that I find it best not to speak.
a. yes, b. in between, c. no.

167. In education, it is more important to:
a. give the child enough affection,
b. in between,
c. have the child learn desirable habits and attitudes.

168. People regard me as a solid, undisturbed person, unmoved by ups and downs in circumstances.
a. yes, b. in between, c. no.

169. I think society should let reason lead it to new customs and throw aside old habits or mere traditions.
a. yes. b. in between. c. no.

170. I think it is more important in the modern world to solve:
a. the question of moral purpose,
b. uncertain,
c. the political difficulties.

171. I learn better by:
a. reading a well-written book,
b. in between,
c. joining a group discussion.

172. I like to go my own way instead of acting on approved rules.
a. true, b. uncertain, c. false.

173. I like to wait till I am sure that what I am saying is correct, before I put forth an argument.
a. always,
b. generally,
c. only if it's practicable.

174. Small things sometimes "get on my nerves" unbearably, though I realize they are trivial.
a. yes, b. in between, c. no

175. I don't often say things on the spur of the moment that I greatly regret.
a. true, b. uncertain, c. false.

(End, column 7 on answer sheet.)

176. If asked to work with a charity drive, I would
a. accept,
b. uncertain,
c. politely say I'm too busy.

177. Which of the following words does not belong with the others?
a. wide, b. zigzag, c. straight.

178. "Soon" is to "never" as "near
a. nowhere, b. far, c. away

179. If I make an awkward social mistake, I can soon forget it.
a. yes, b. in between, c. no.

180. I am known as an "idea man" who almost always puts forward some ideas on a problem.
a. yes, b. in between, c. no.

81. I think I am better at showing .
a. nerve in meeting challenges,
b. uncertain,
c. tolerance of other people's wishes.

182. I am considered a very enthusiastic person.
a. yes, b. in between, c. no.

183. I like a job that offers change, variety, and travel, even if it involves some danger.
a. yes, b. in between, c. no.

184. I am a fairly strict person, insisting on always doing things as correctly as possible.
a. true, b. in between, c. false.

185. I enjoy work that requires conscientious, exacting skills.
a. yes, b. in between, c. no.

186. I'm the energetic type who keeps busy.
a. yes, **b. uncertain, c. no.**

187. I am sure there are no questions that I have skipped or failed to answer properly.
a. yes, b. uncertain, c. no.

(End of test.)

★ Check उदाहरण

	a	b	c
1	☐	☐	☐
2	☐	☐	☐

The PSYCHO CENTRE

(V.S.J.)

उत्तर-पत्र

	a	b	c
3	☐	☐	☐
4	☐	☐	☐

ANSWER SHEET : THE 16 P.F. TEST FORM—(A OR B)

NAME _____ First _____ Middle _____ Last _____

SEX _____ (Write M or F) AGE _____ (Nearest Year) DATE _____

RAW SCORE

	a	b	c		a	b	c		a	b	c		a	b	c		a	b	c		a	b	c		a	b	c
1	☐	☐	☐	26	☐	☐	☐	51	☐	☐	☐	76	☐	☐	☐	101	☐	☐	☐	126	☐	☐	☐	151	☐	☐	☐	176	☐	☐	☐
2	☐	☐	☐	27	☐	☐	☐	52	☐	☐	☐	77	☐	☐	☐	102	☐	☐	☐	127	☐	☐	☐	152	☐	☐	☐	177	☐	☐	☐
3	☐	☐	☐	28	☐	☐	☐	53	☐	☐	☐	78	☐	☐	☐	103	☐	☐	☐	128	☐	☐	☐	153	☐	☐	☐	178	☐	☐	☐
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5	☐	☐	☐	30	☐	☐	☐	55	☐	☐	☐	80	☐	☐	☐	105	☐	☐	☐	130	☐	☐	☐	155	☐	☐	☐	180	☐	☐	☐

FILL IN THE BOX COMPLETELY, ERASE ENTIRELY ANY ANSWER YOU WISH TO CHANGE

	a	b	c		a	b	c		a	b	c		a	b	c		a	b	c		a	b	c		a	b	c
6	☐	☐	☐	31	☐	☐	☐	56	☐	☐	☐	81	☐	☐	☐	106	☐	☐	☐	131	☐	☐	☐	156	☐	☐	☐	181	☐	☐	☐
7	☐	☐	☐	32	☐	☐	☐	57	☐	☐	☐	82	☐	☐	☐	107	☐	☐	☐	132	☐	☐	☐	157	☐	☐	☐	182	☐	☐	☐
8	☐	☐	☐	33	☐	☐	☐	58	☐	☐	☐	83	☐	☐	☐	108	☐	☐	☐	133	☐	☐	☐	158	☐	☐	☐	183	☐	☐	☐
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21	☐	☐	☐	46	☐	☐	☐	71	☐	☐	☐	96	☐	☐	☐	121	☐	☐	☐	146	☐	☐	☐	171	☐	☐	☐				
22	☐	☐	☐	47	☐	☐	☐	72	☐	☐	☐	97	☐	☐	☐	122	☐	☐	☐	147	☐	☐	☐	172	☐	☐	☐				
23	☐	☐	☐	48	☐	☐	☐	73	☐	☐	☐	98	☐	☐	☐	123	☐	☐	☐	148	☐	☐	☐	173	☐	☐	☐				
24	☐	☐	☐	49	☐	☐	☐	74	☐	☐	☐	99	☐	☐	☐	124	☐	☐	☐	149	☐	☐	☐	174	☐	☐	☐				
25	☐	☐	☐	50	☐	☐	☐	75	☐	☐	☐	100	☐	☐	☐	125	☐	☐	☐	150	☐	☐	☐	175	☐	☐	☐				

END OF TEST

Do not write here

NORMS USED

- ☐ HS
- ☐ Col
- ☐ Gen. Pop.
- ☐ A
- ☐ B
- ☐ A+B
- ☐ M
- ☐ F
- ☐ 161-162
- ☐ 167-168

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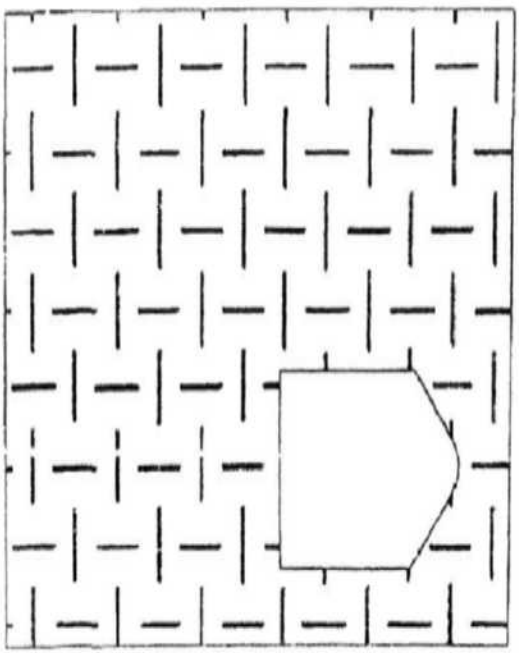
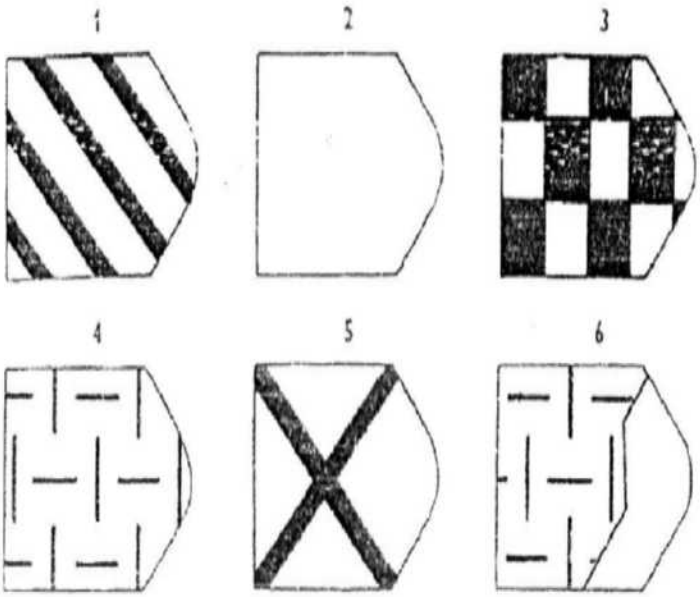
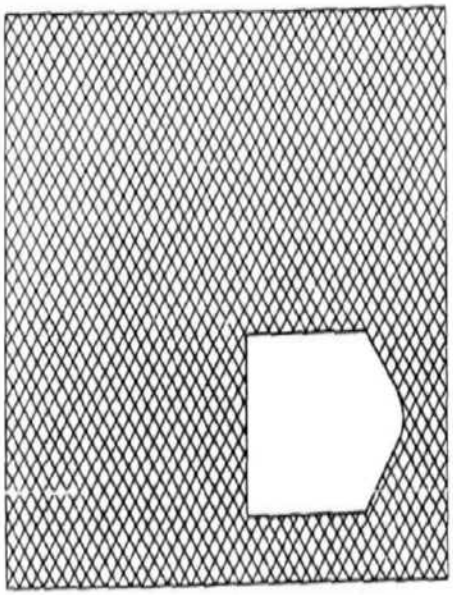
SET A

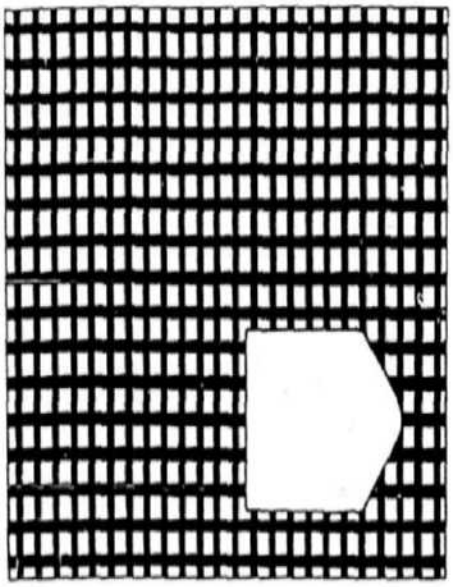
A1

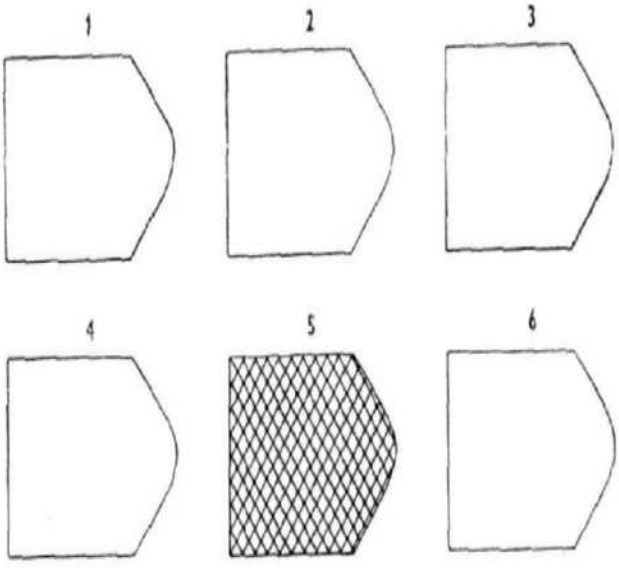
RAVEN'S STANDARD PROGRESSIVE MATRICES (SPM)







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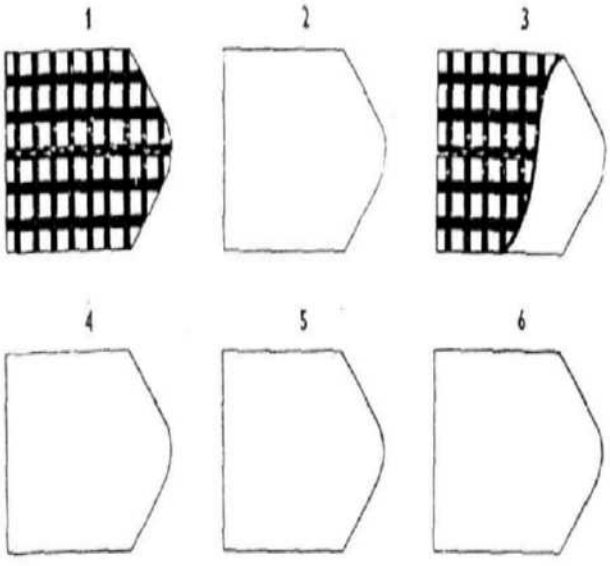
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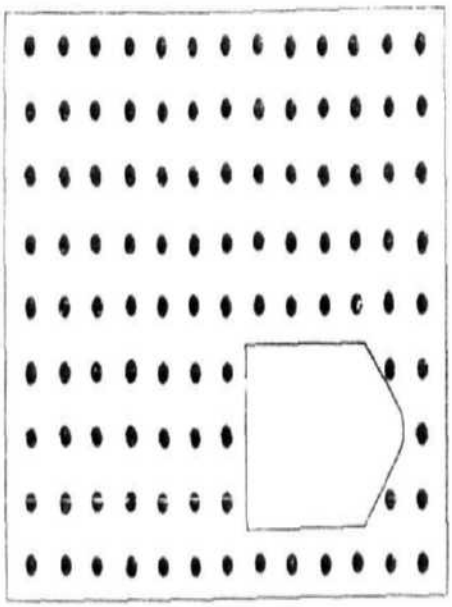

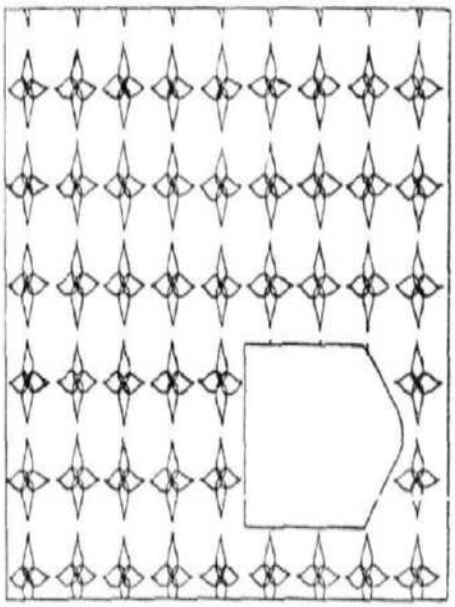

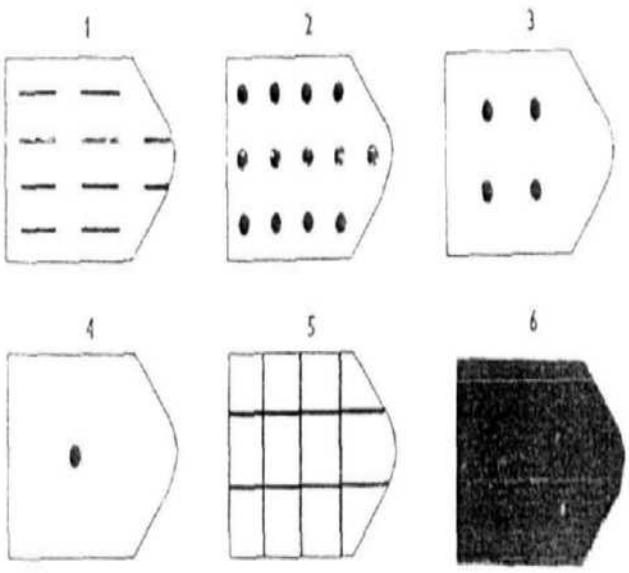
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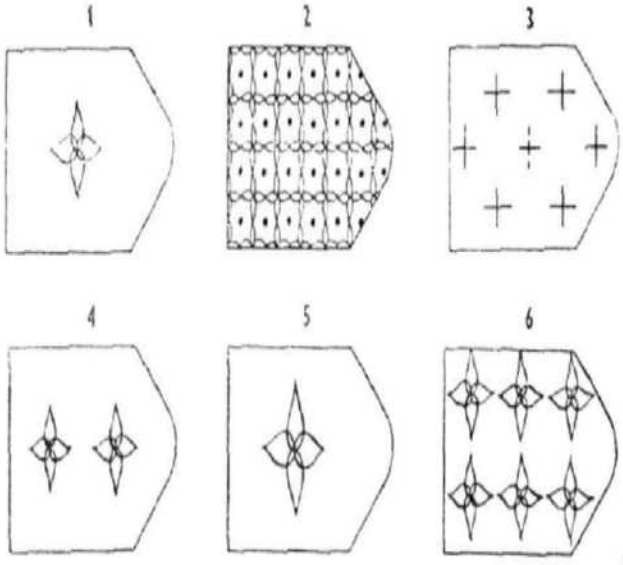
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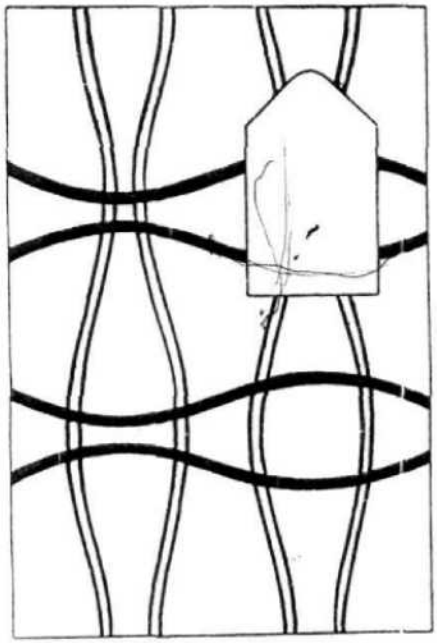

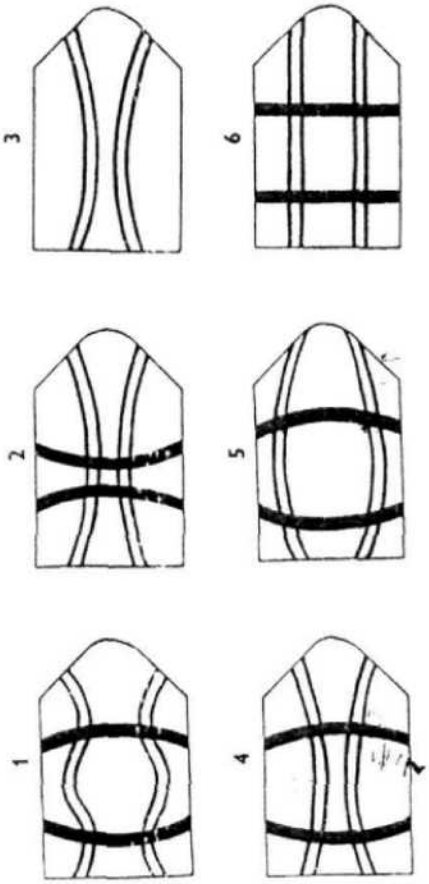
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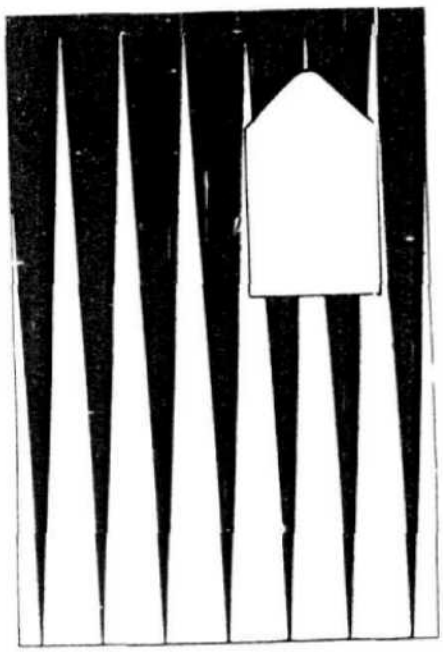

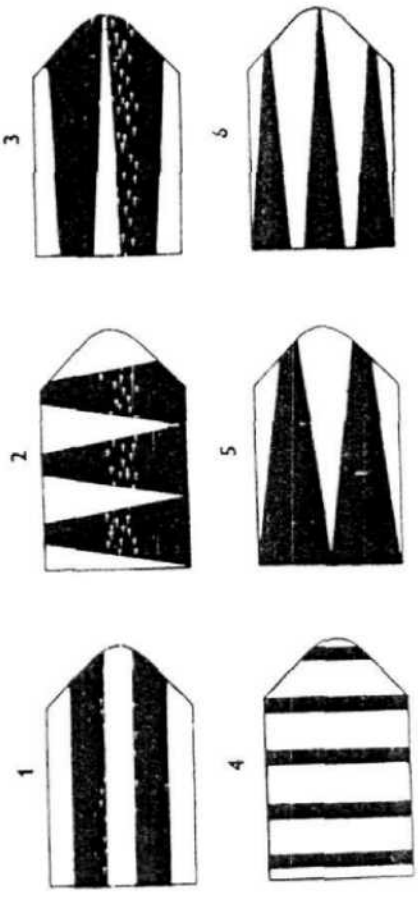
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SET B

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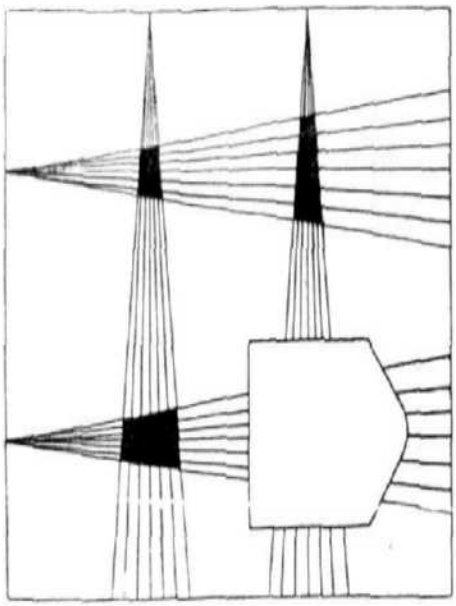

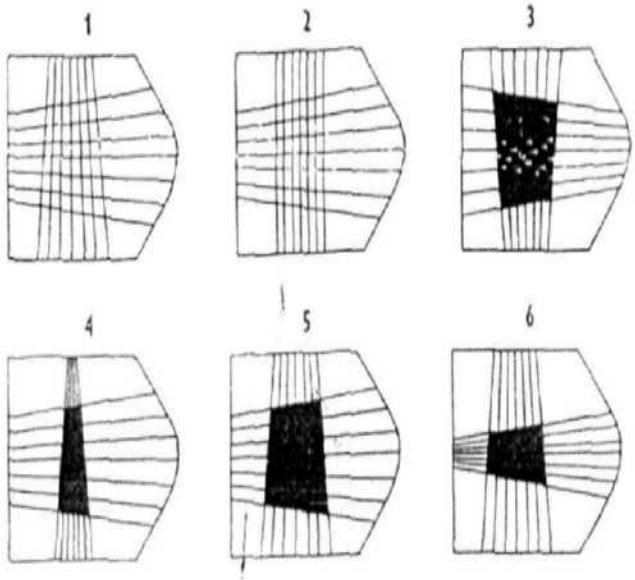

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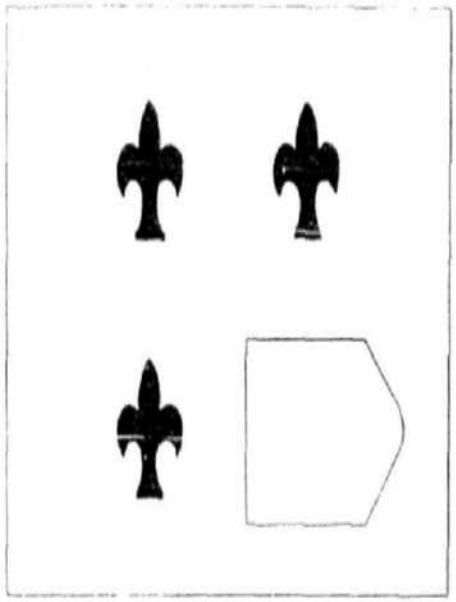

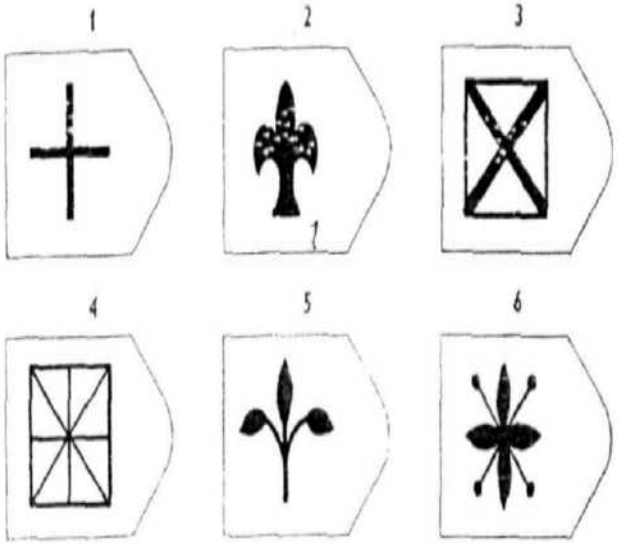

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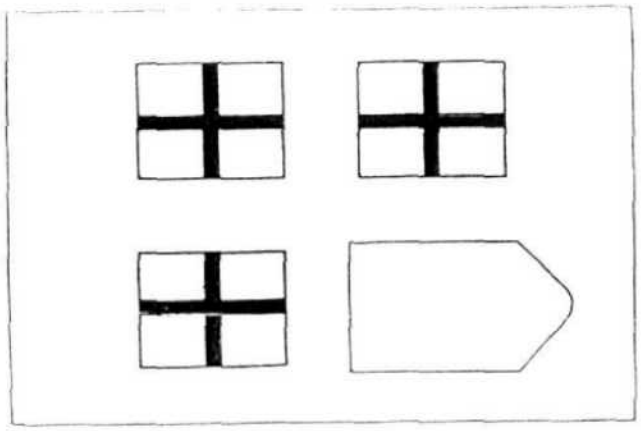

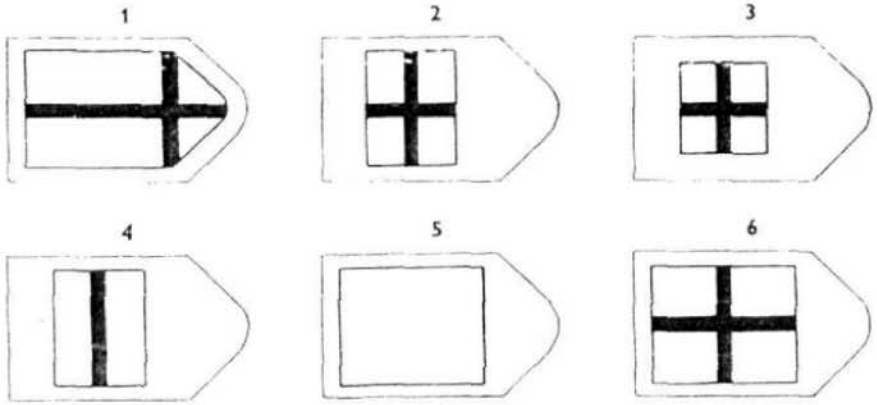

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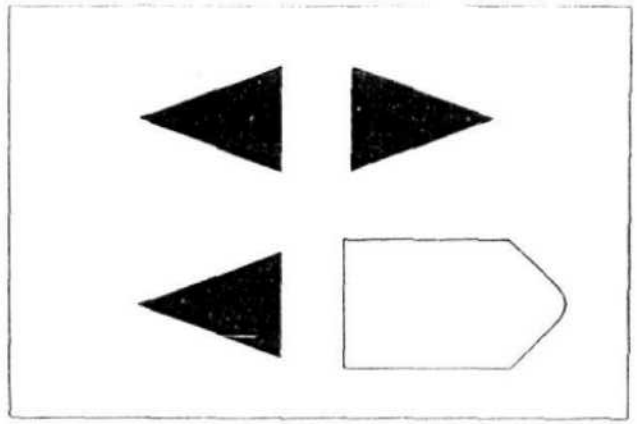

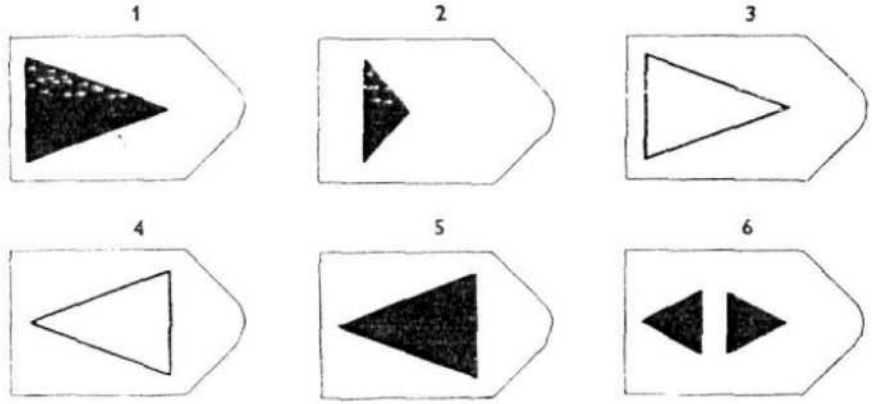

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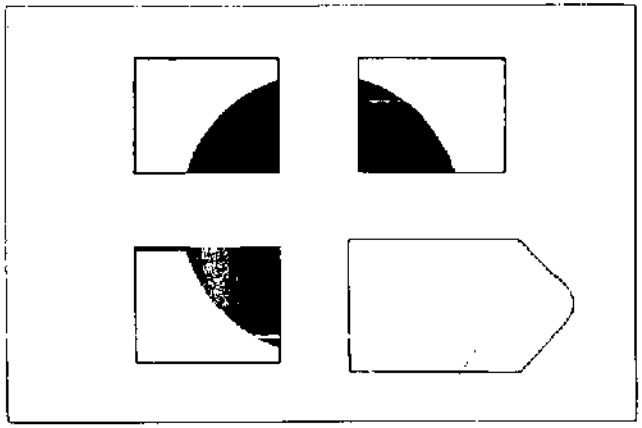

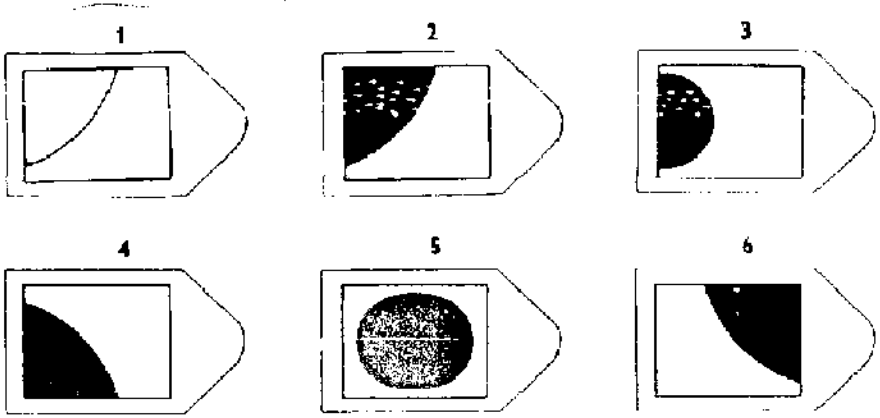

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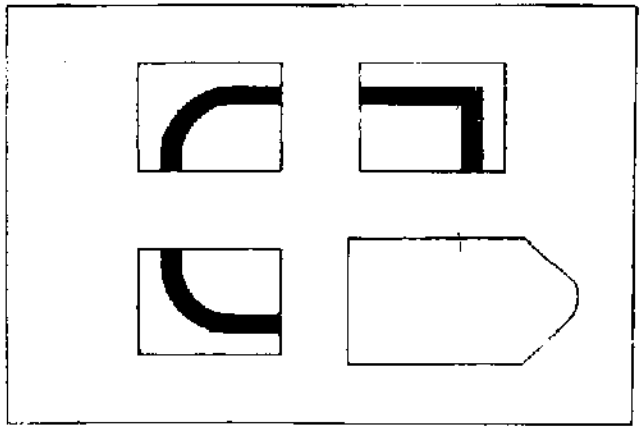

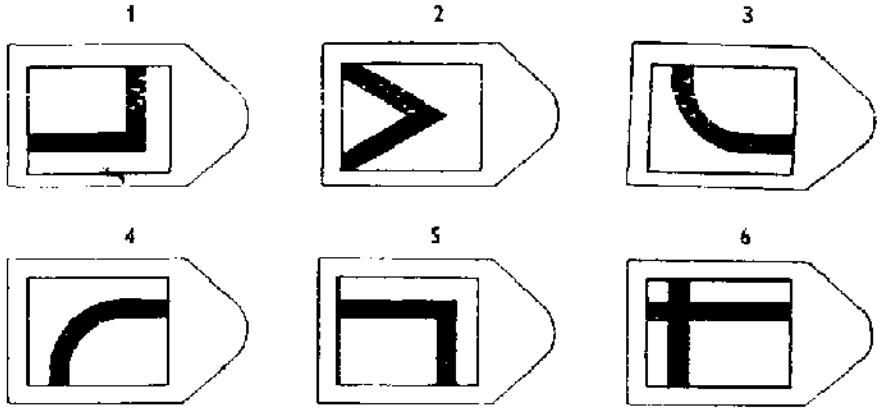

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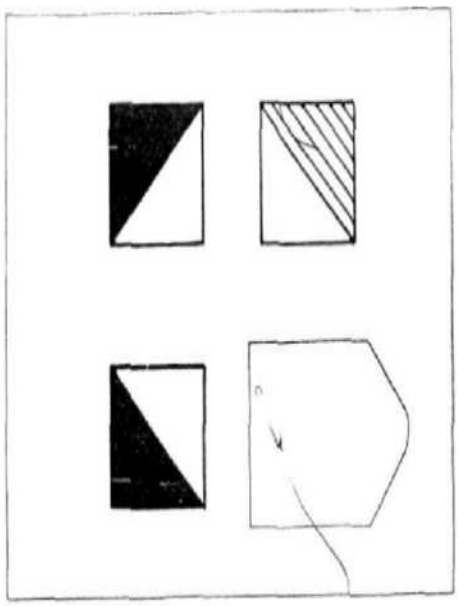

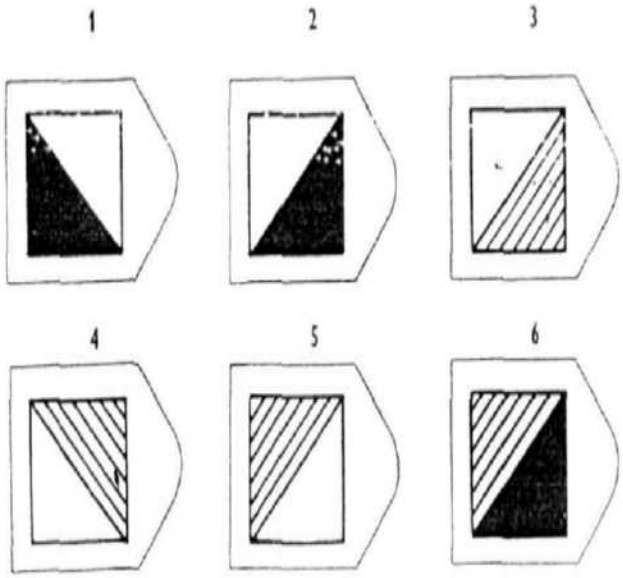

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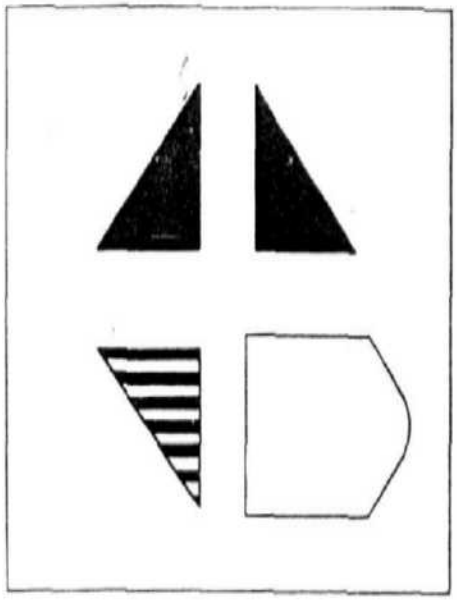

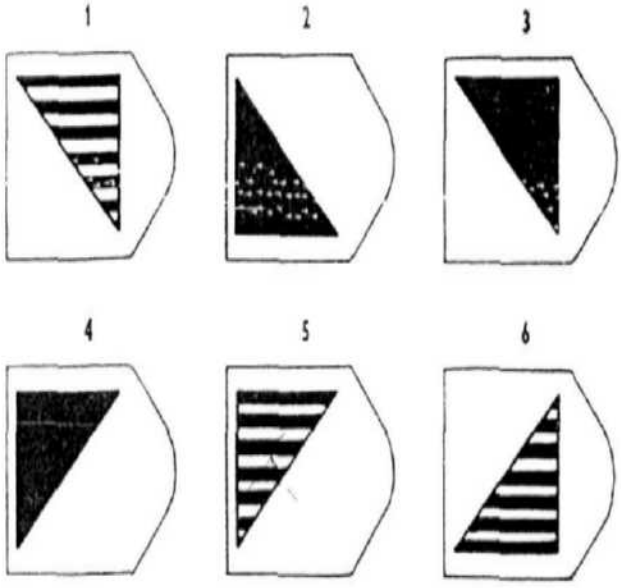

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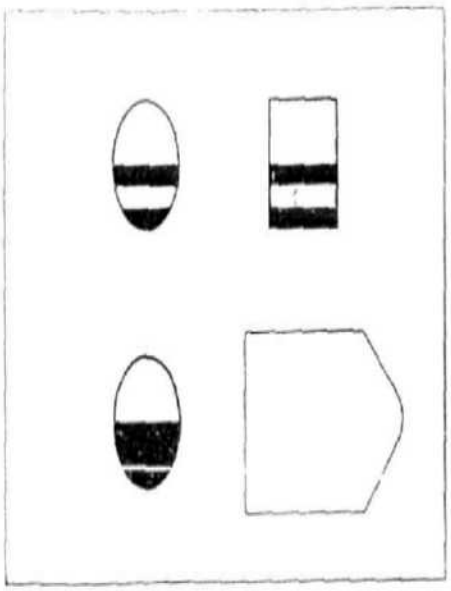

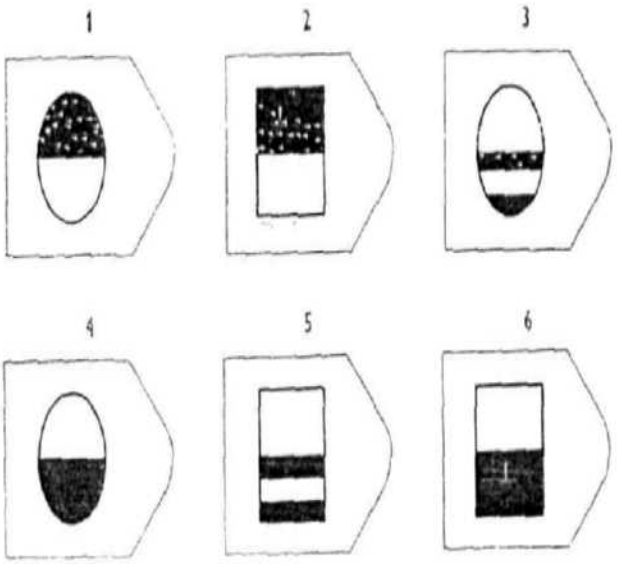

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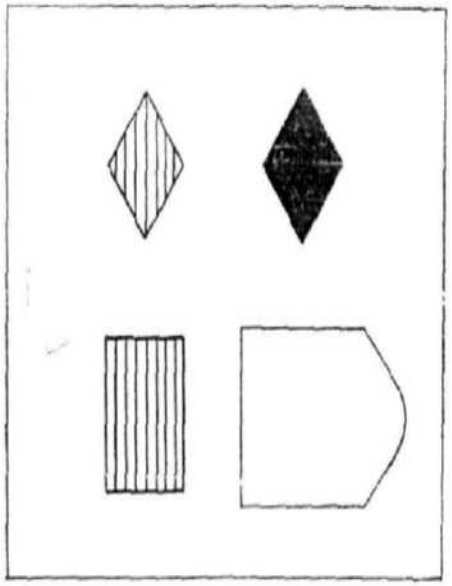

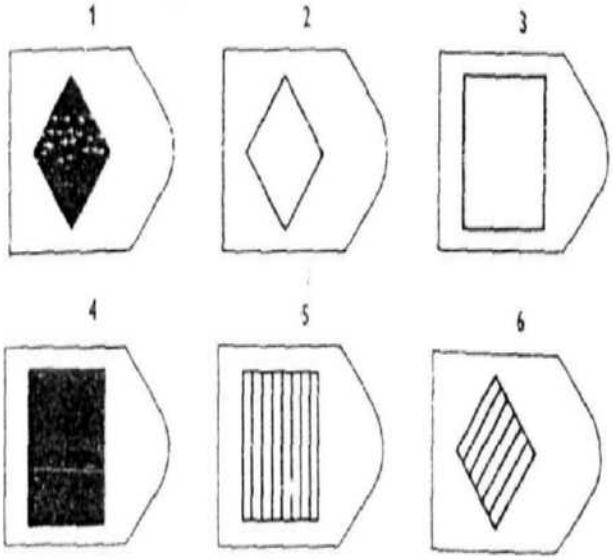

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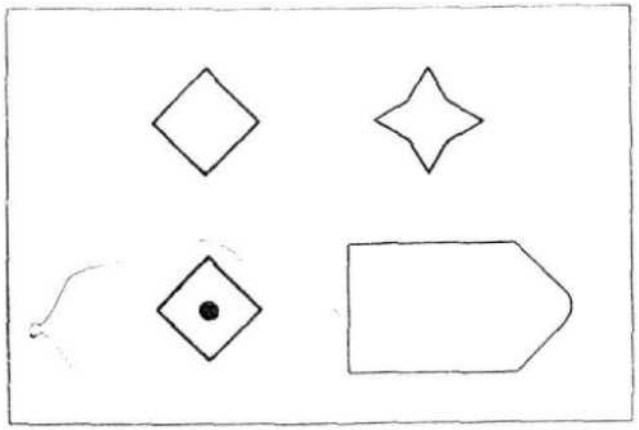

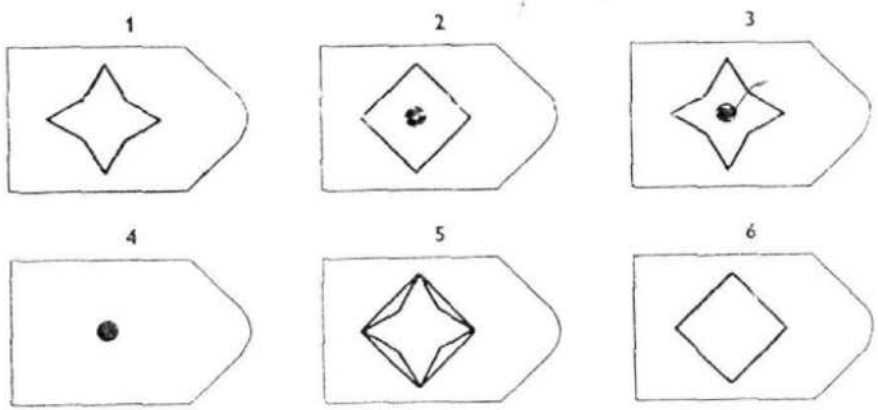

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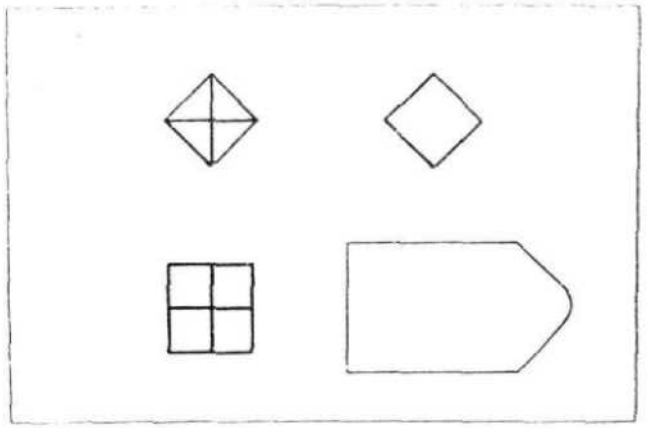

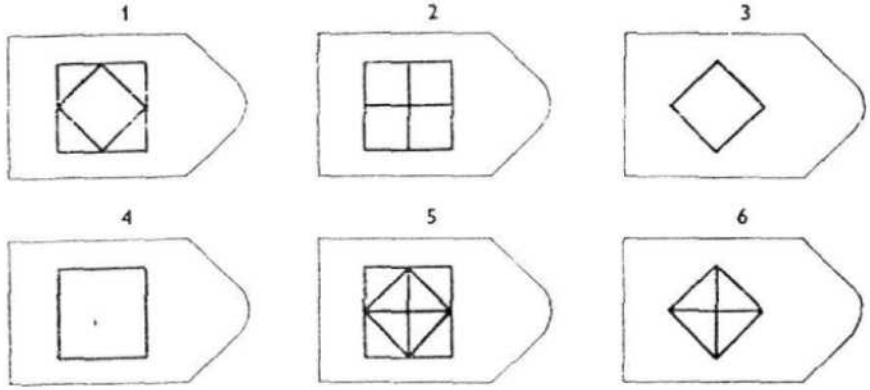

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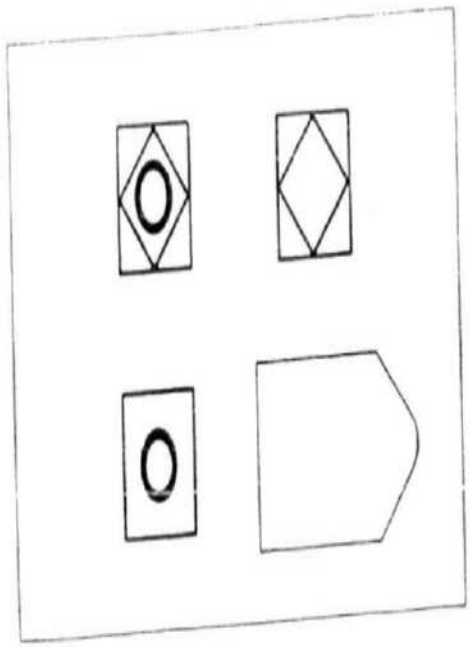

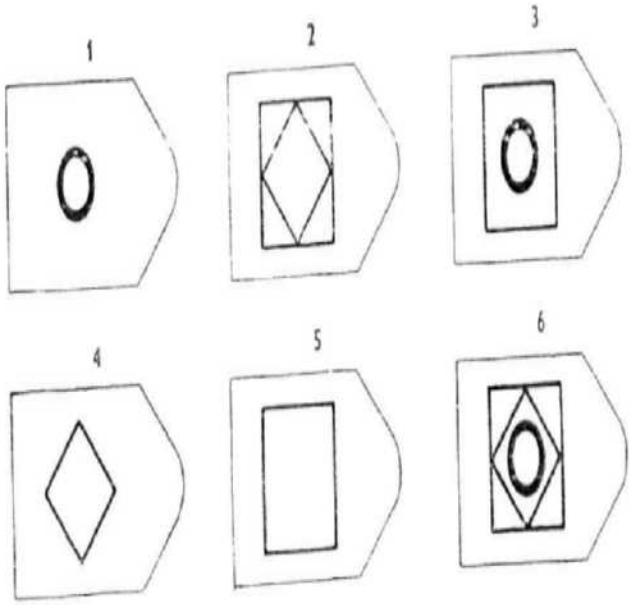

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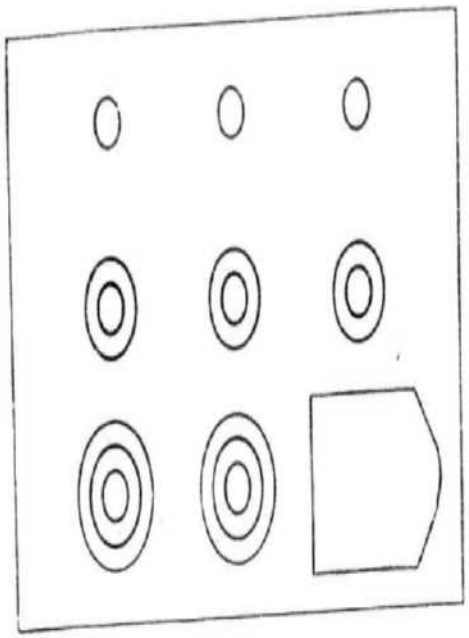

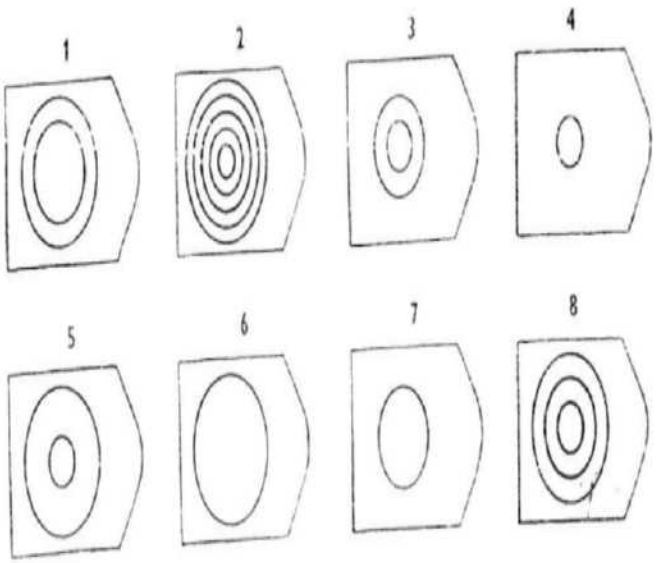

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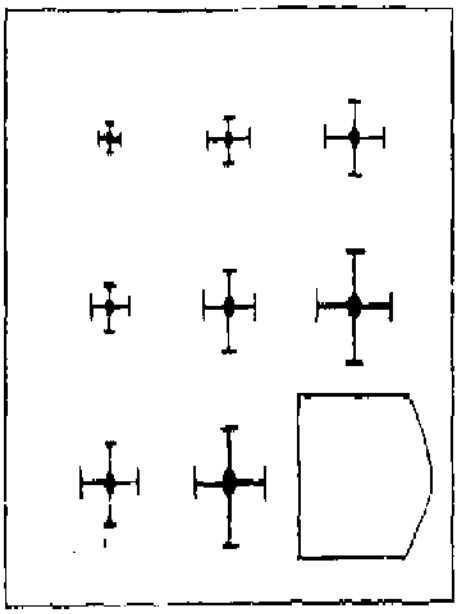

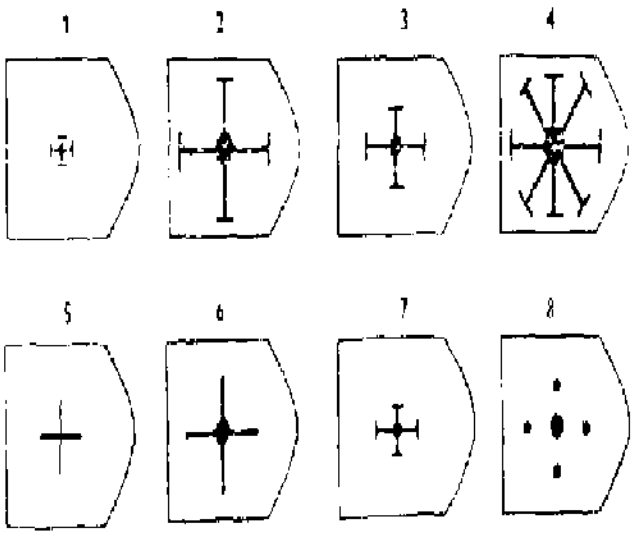

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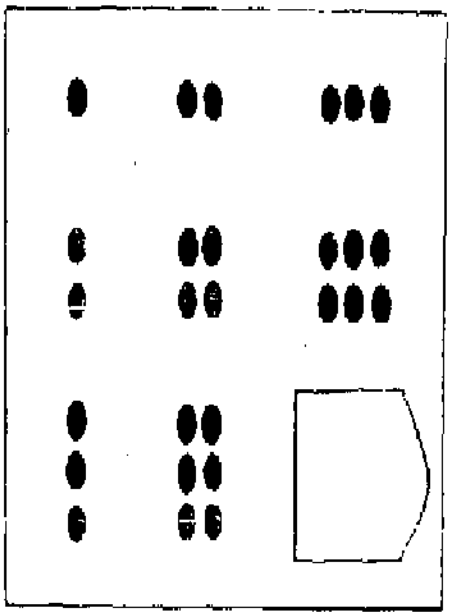

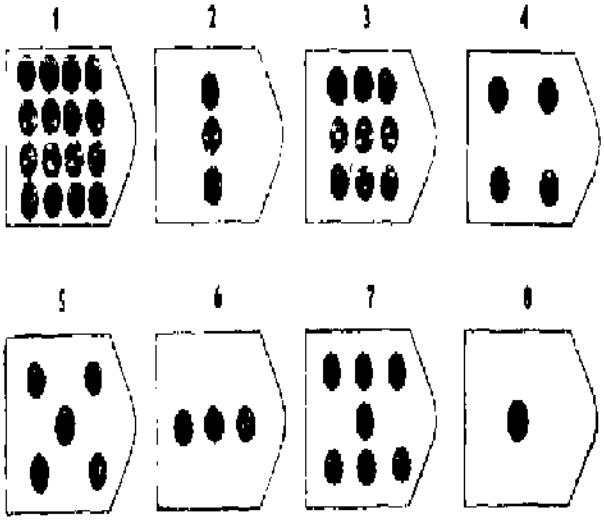

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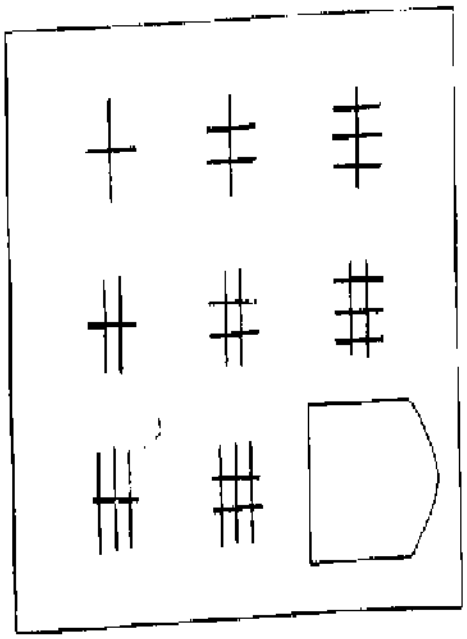

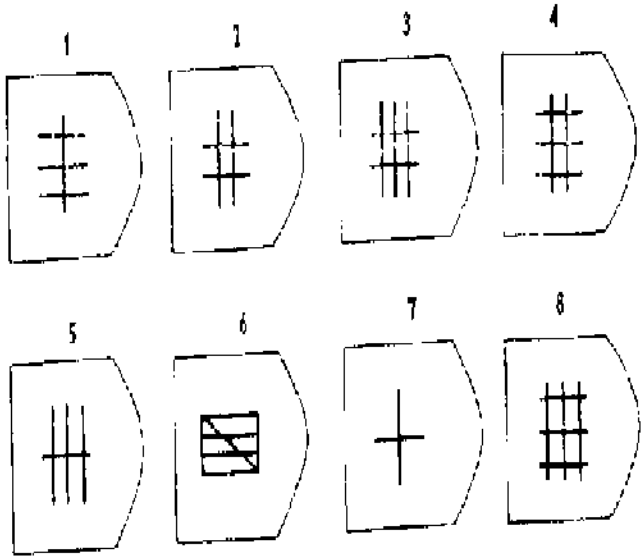

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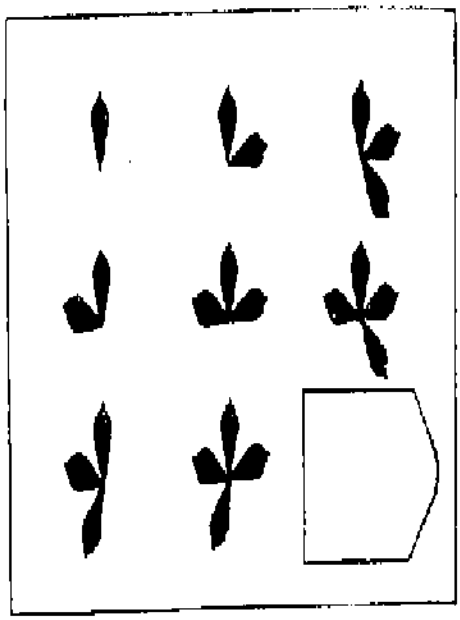

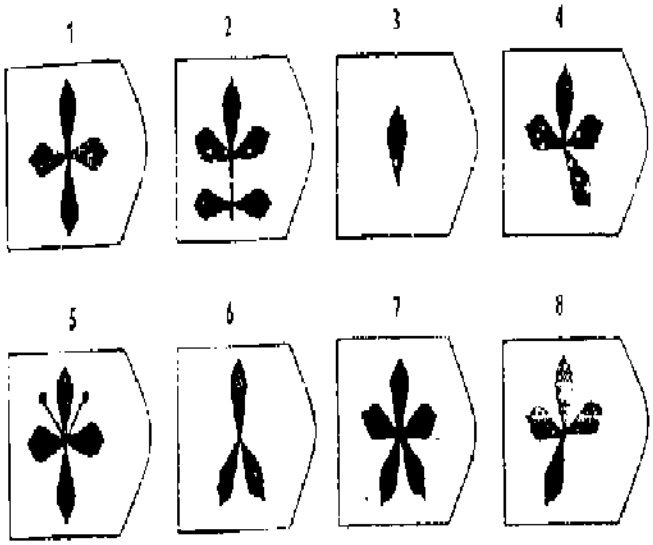

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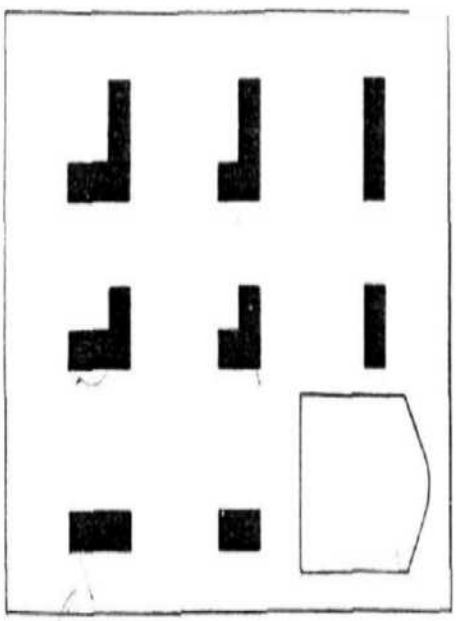

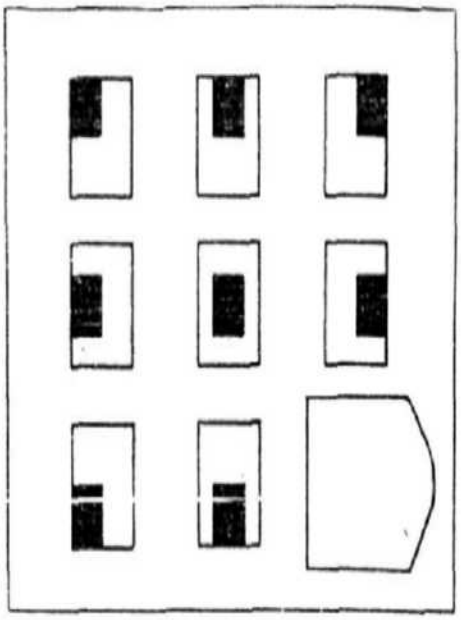

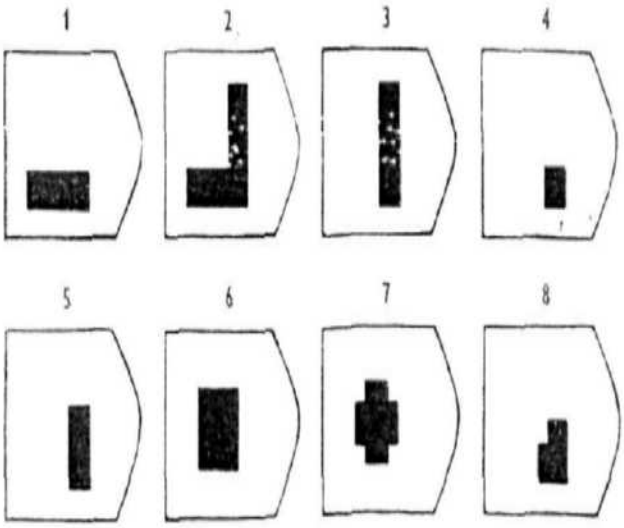

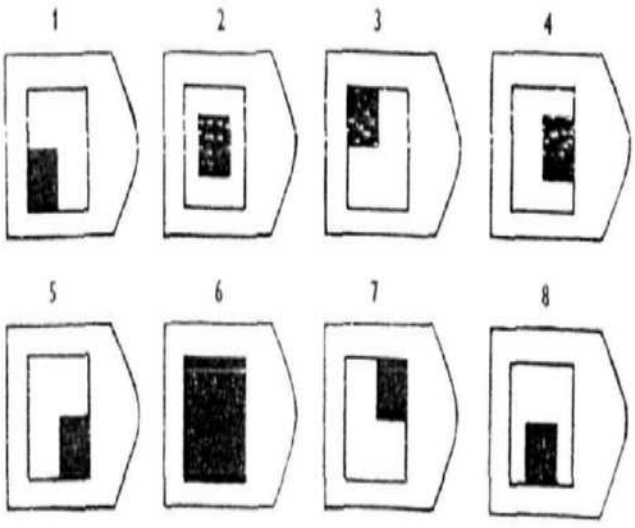

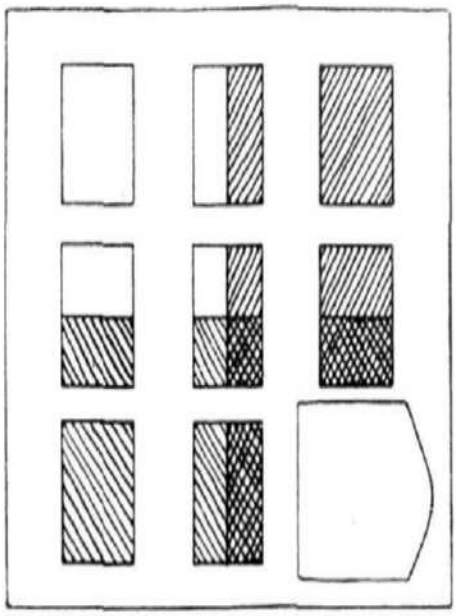

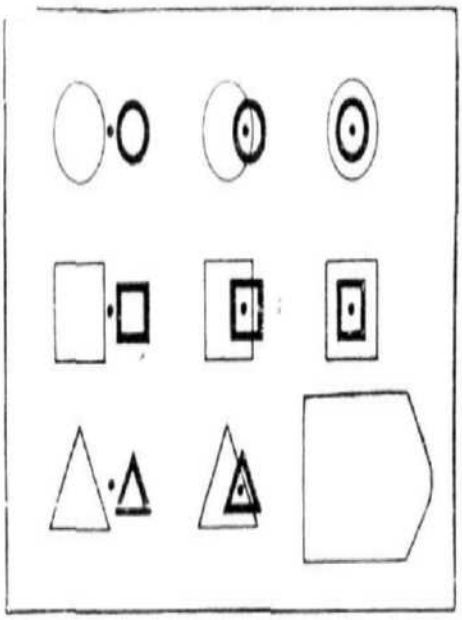

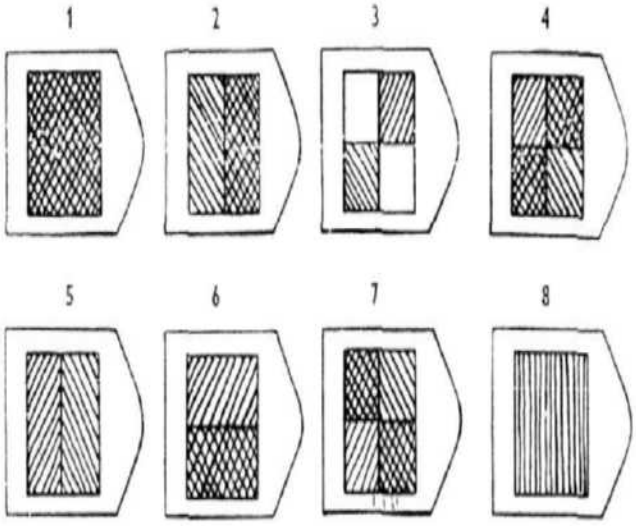
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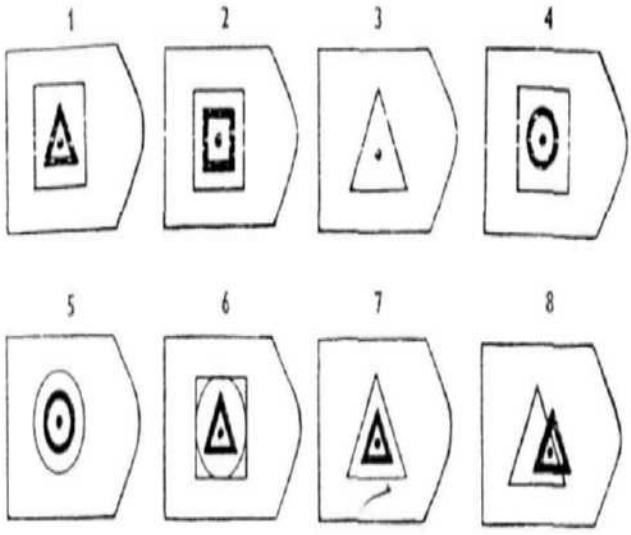
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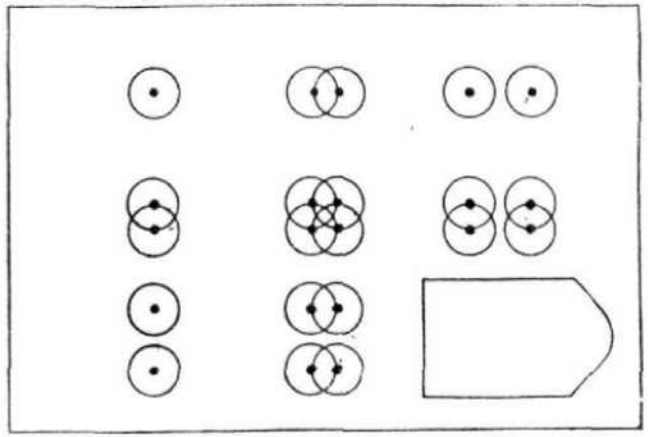

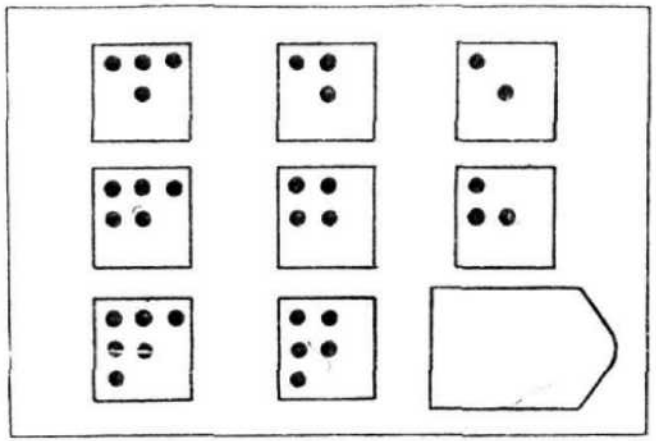

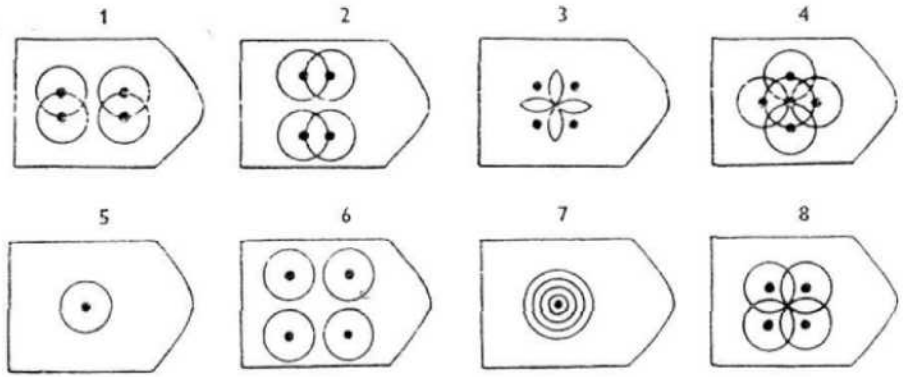
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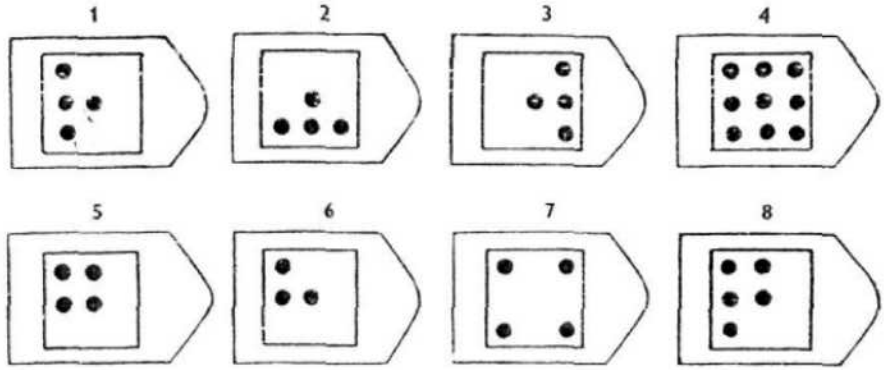
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SET D

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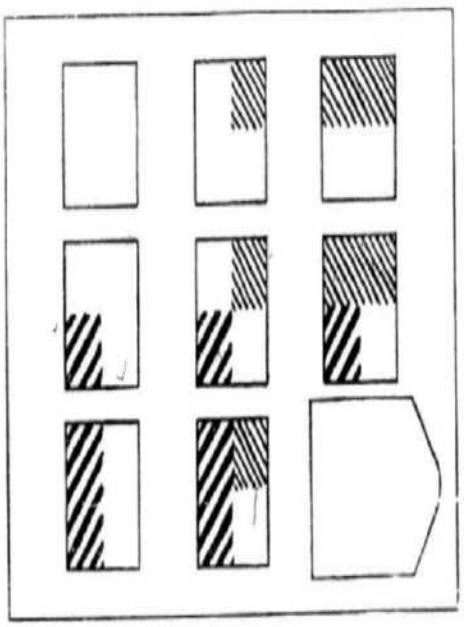

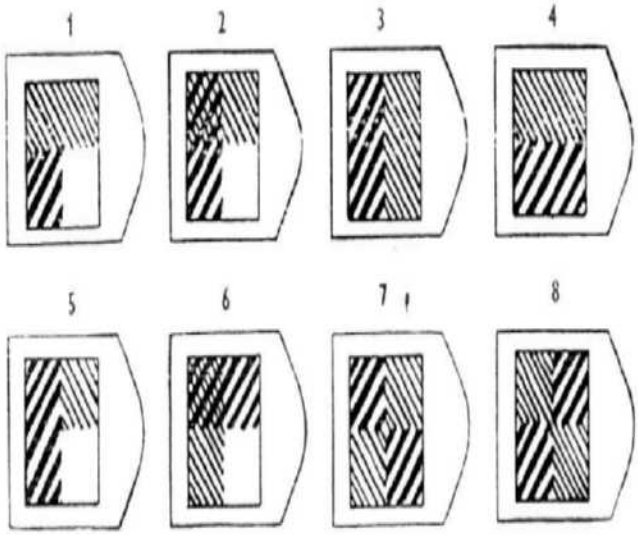

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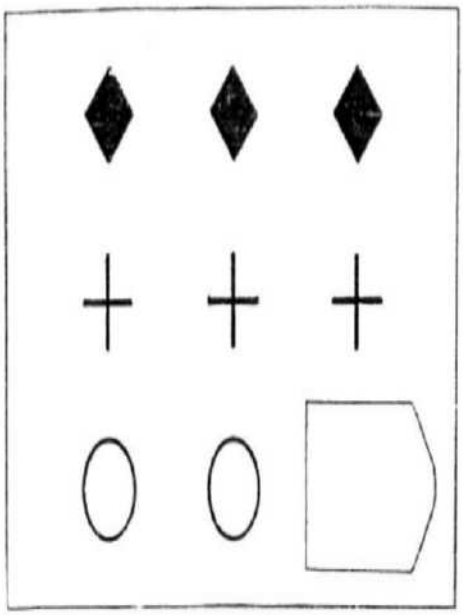

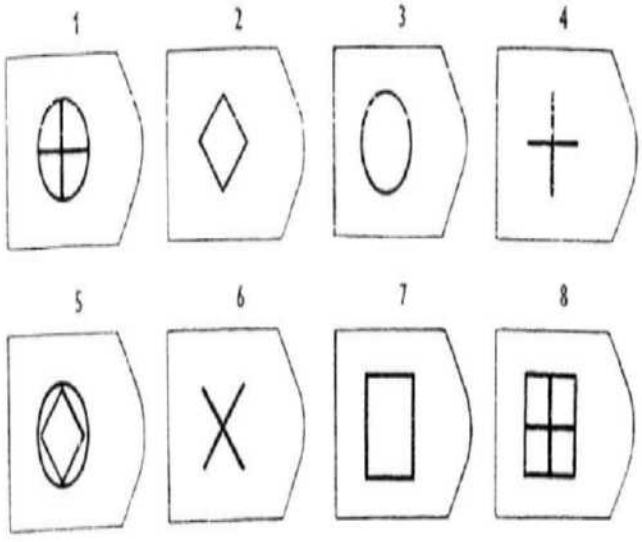

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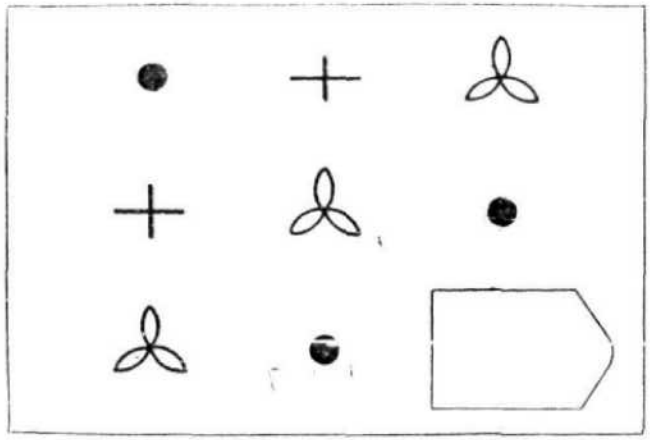

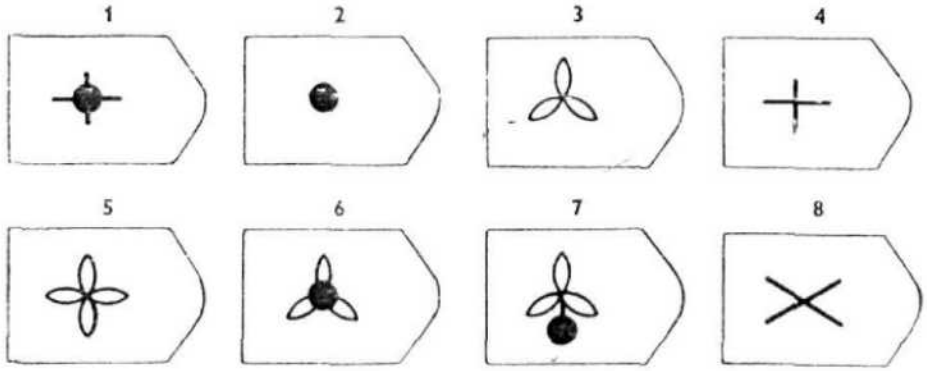

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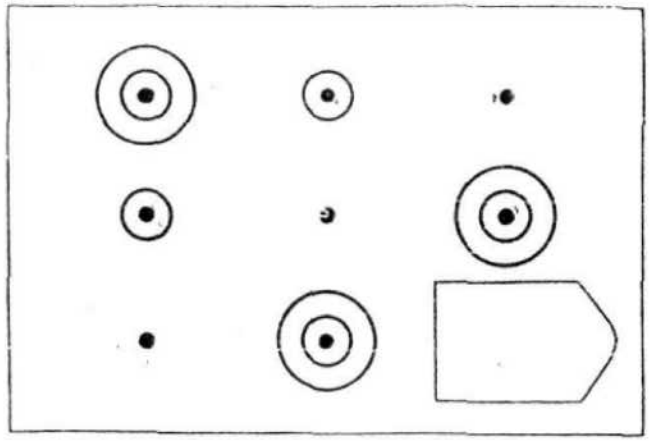

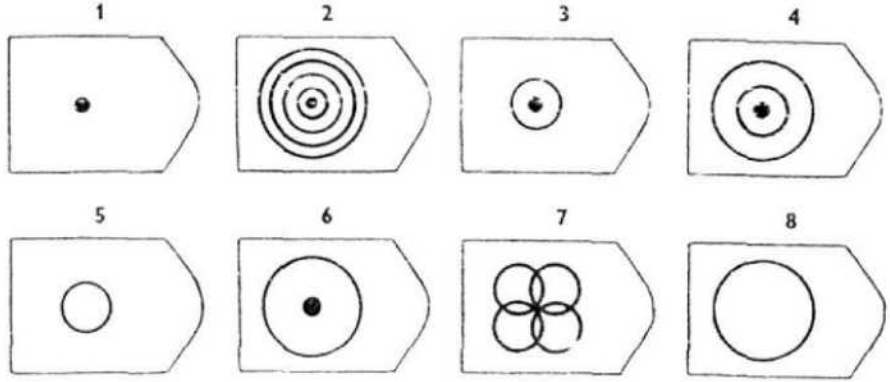

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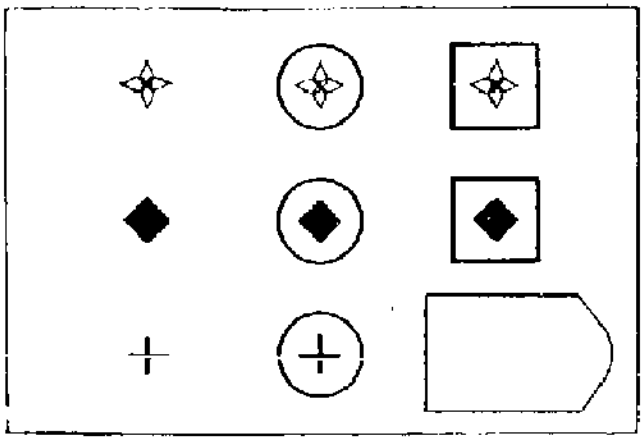

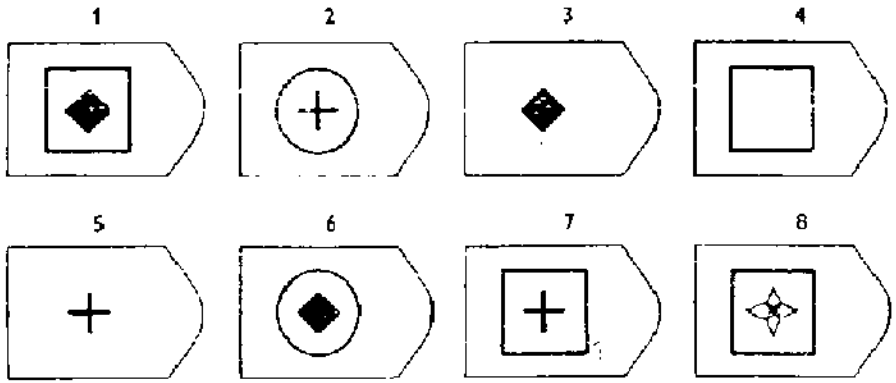

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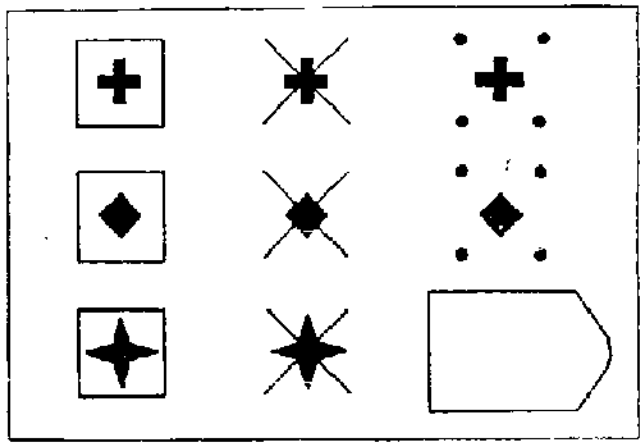

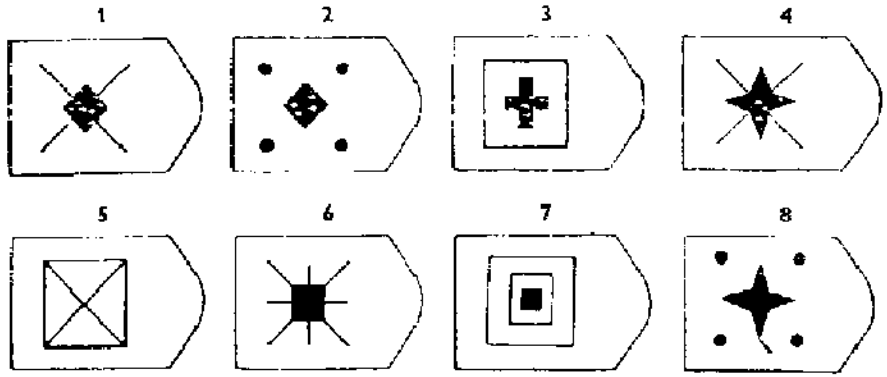

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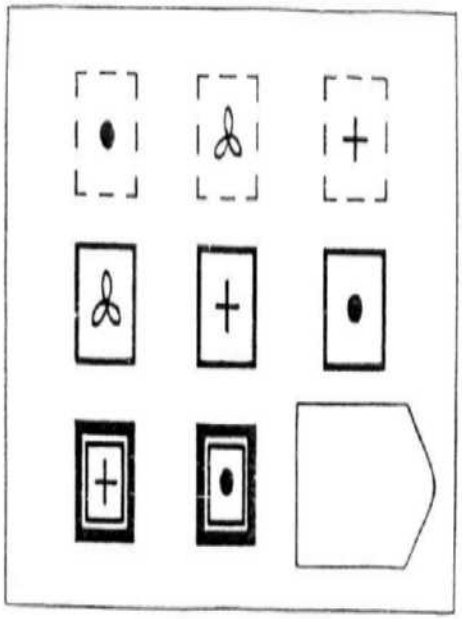

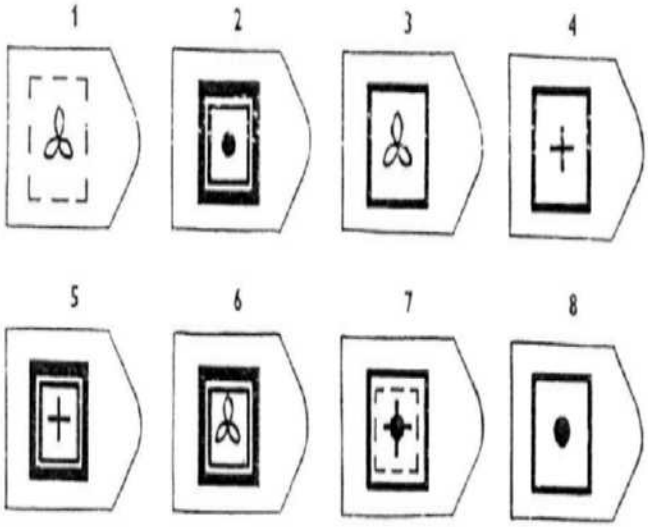

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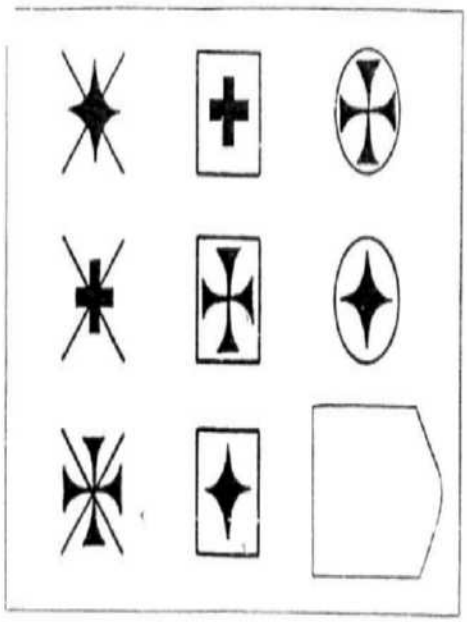

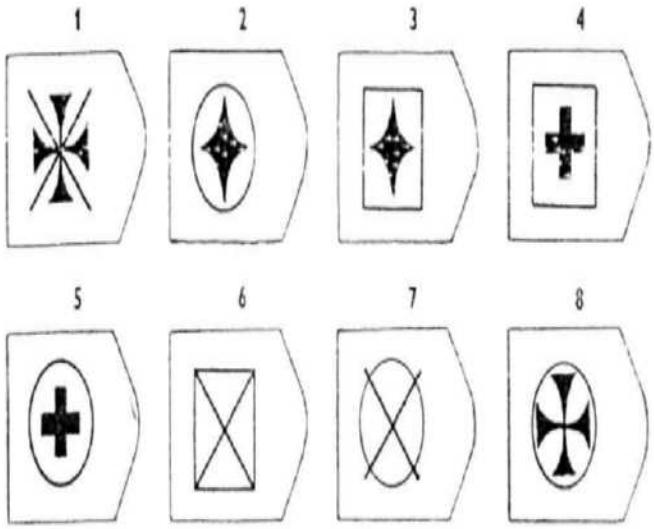

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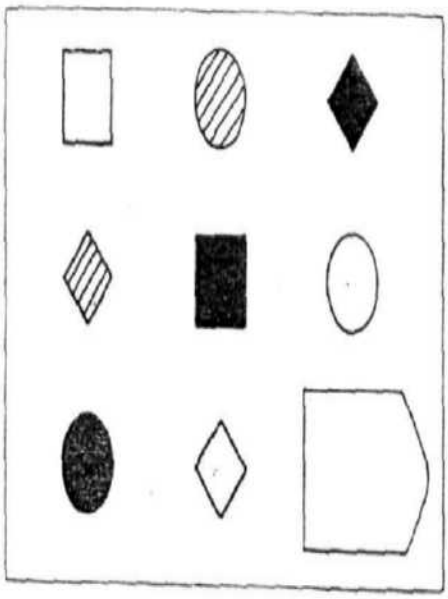

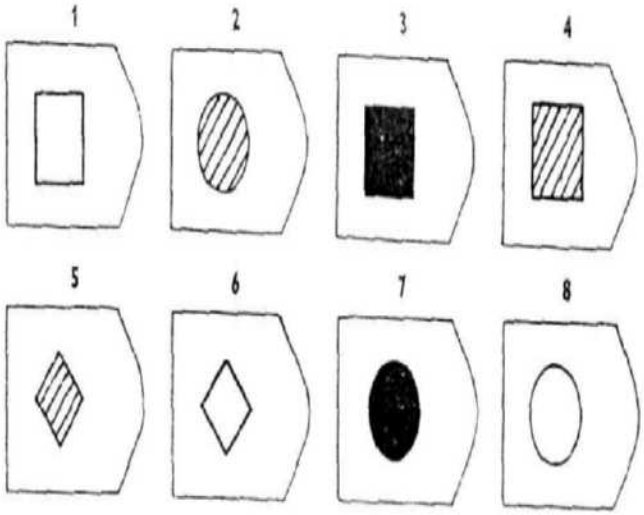

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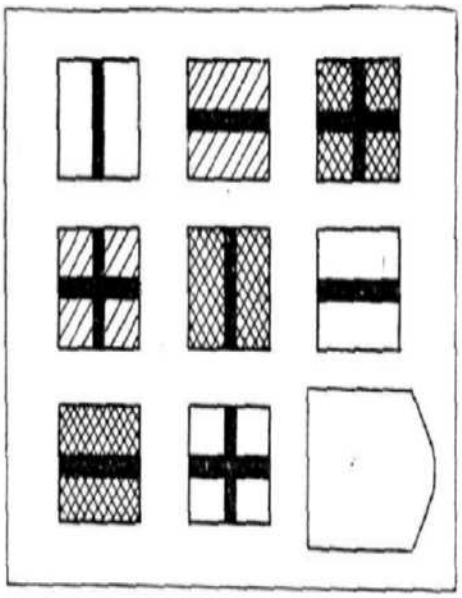

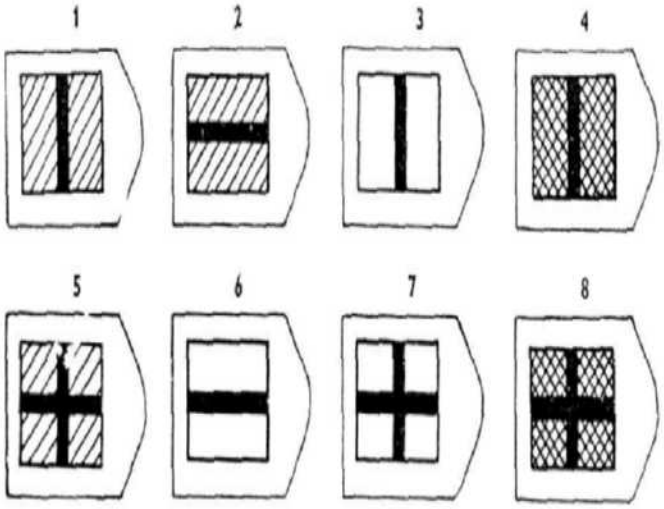

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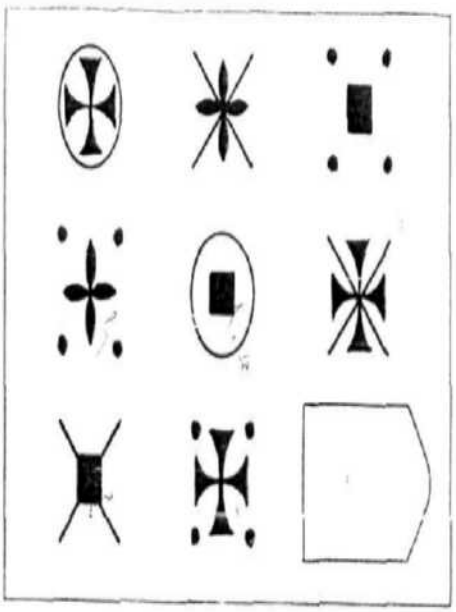

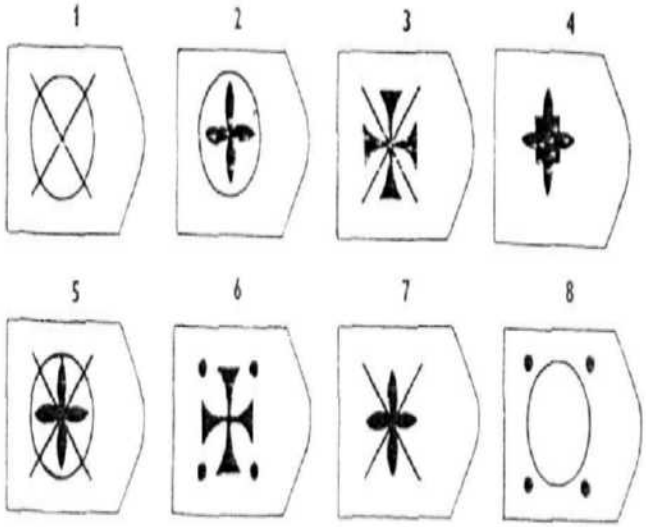

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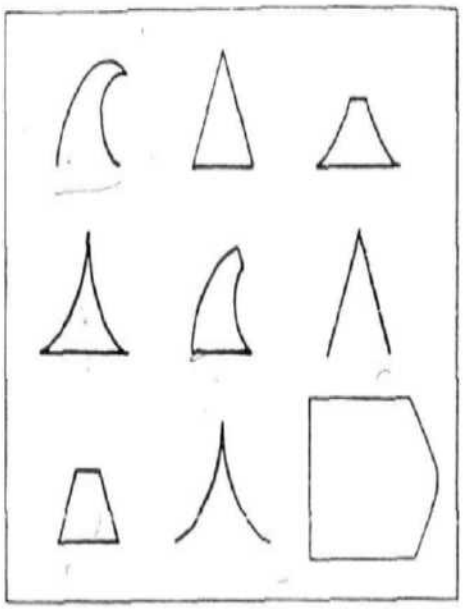

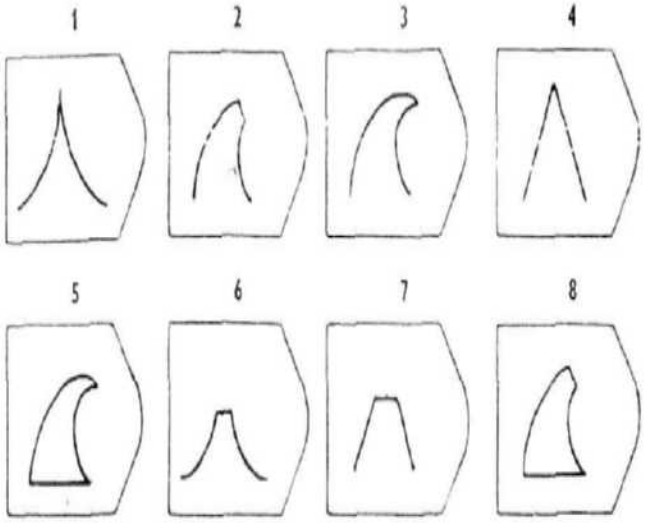

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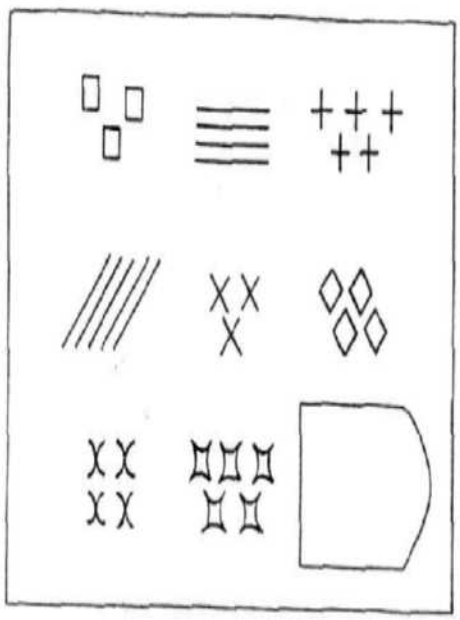

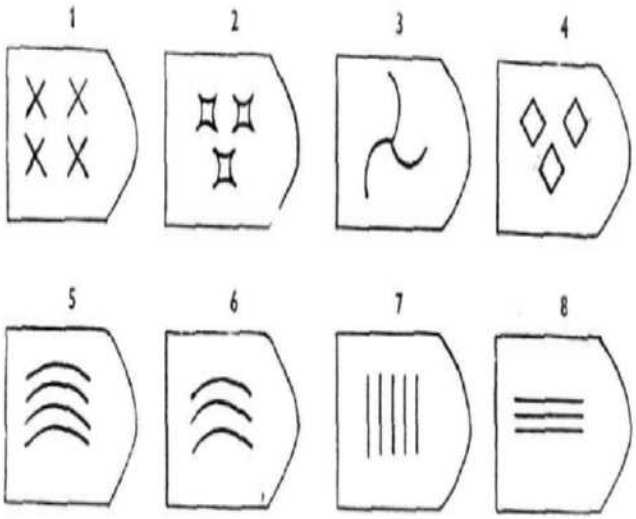

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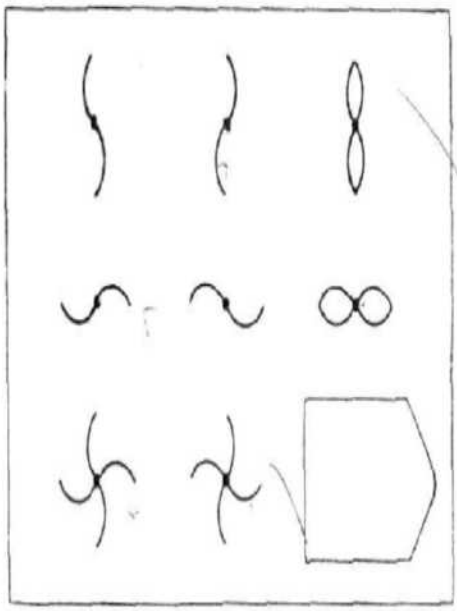

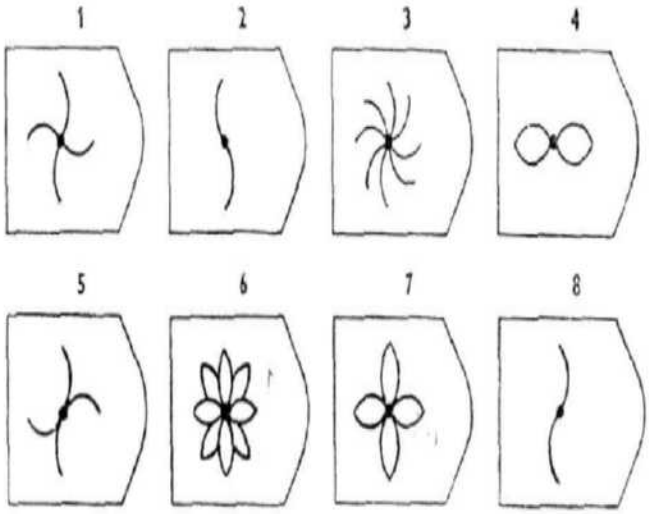

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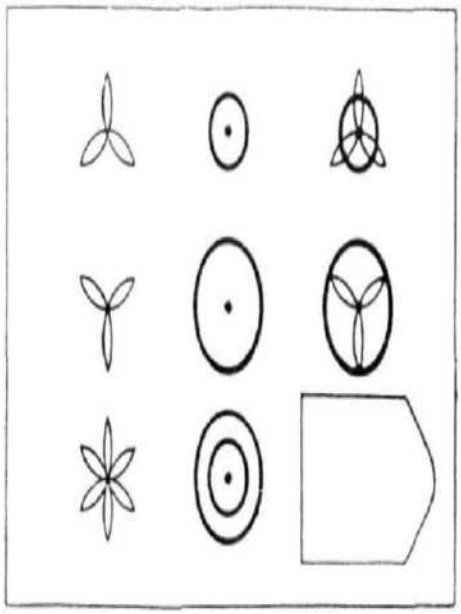

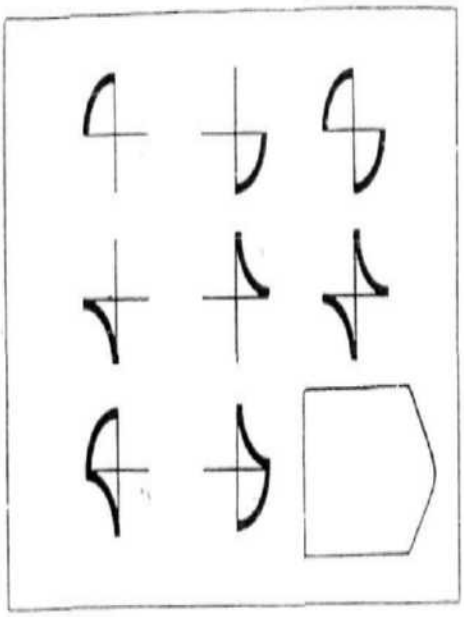

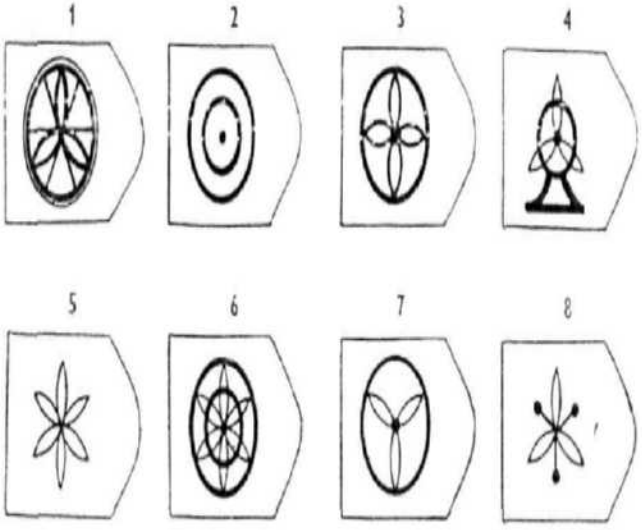

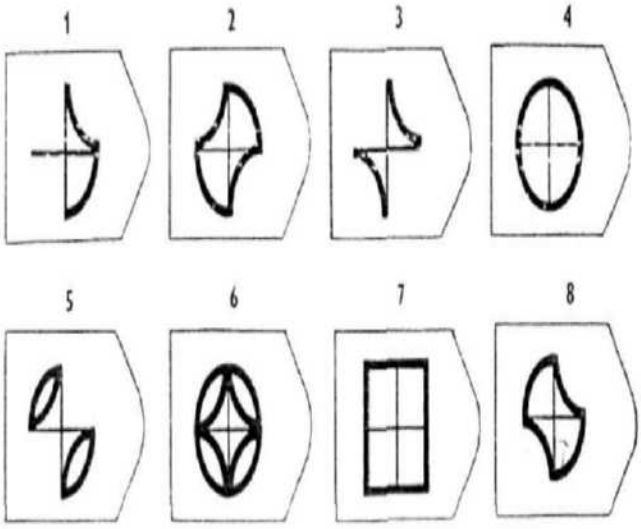

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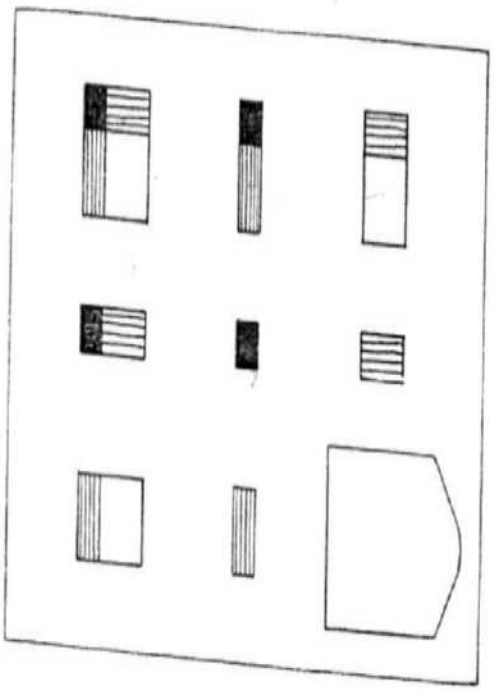

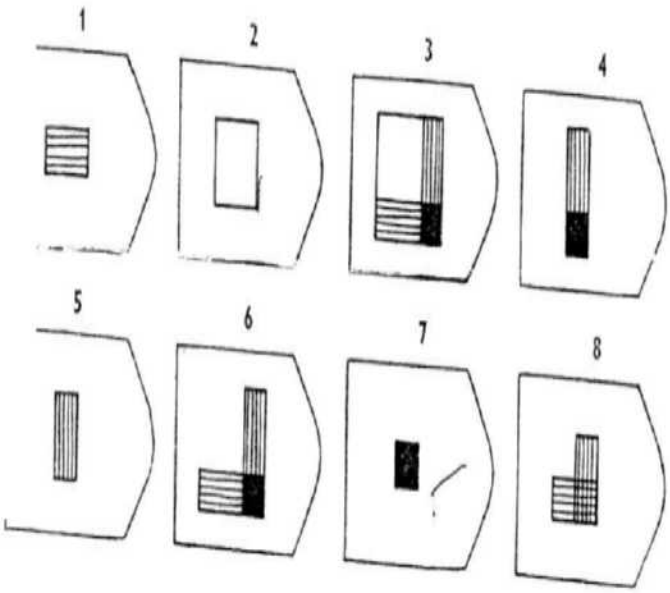

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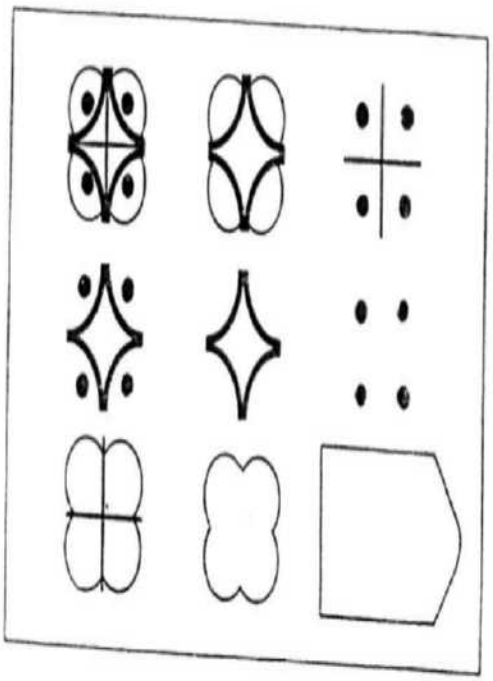

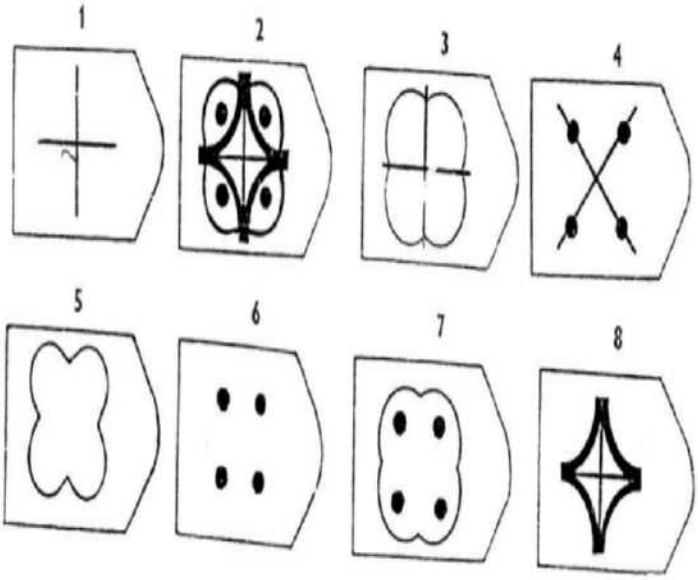

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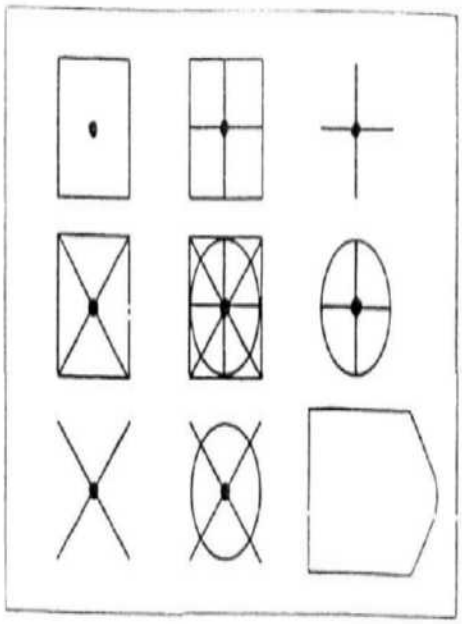

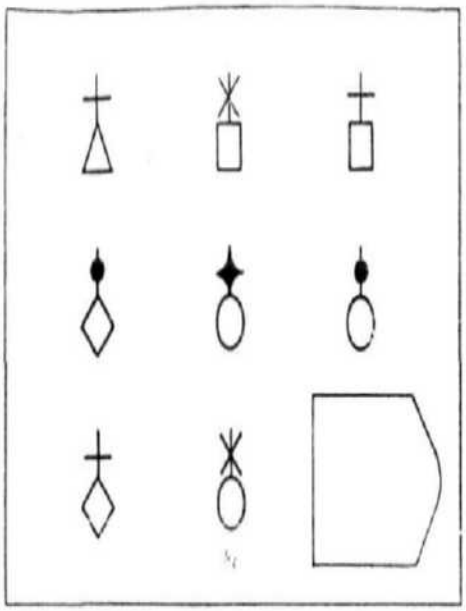

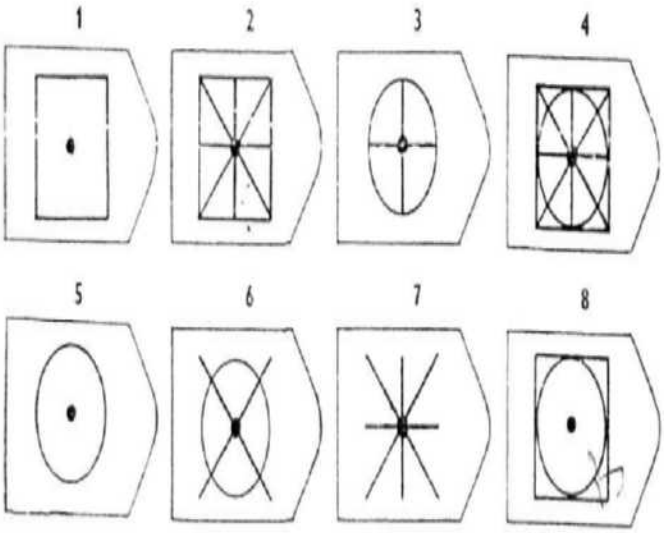

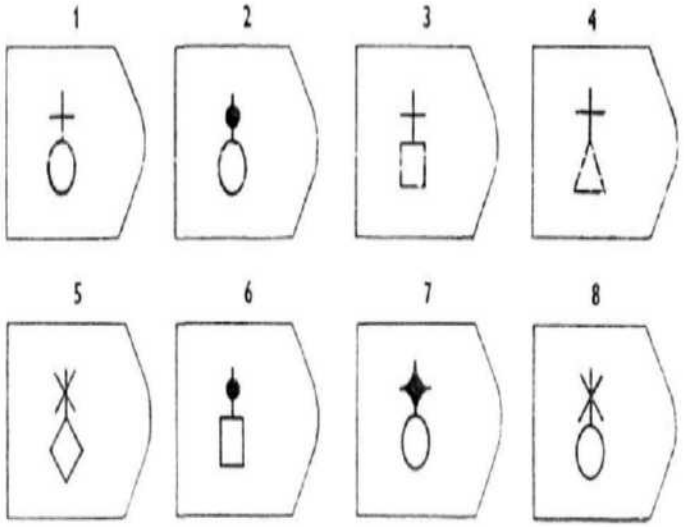

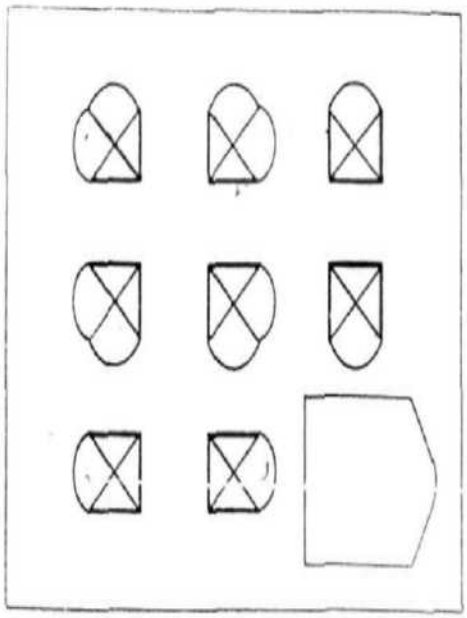

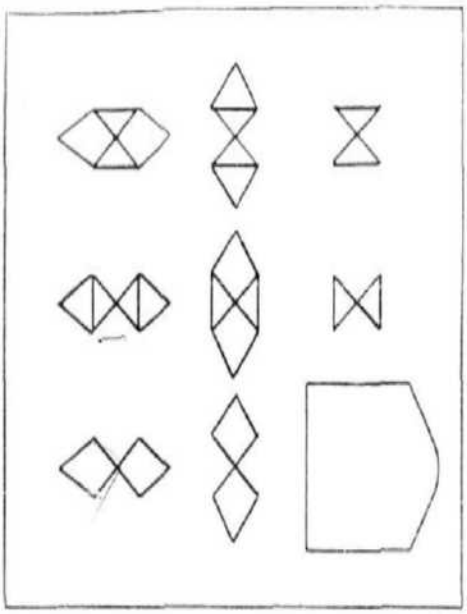

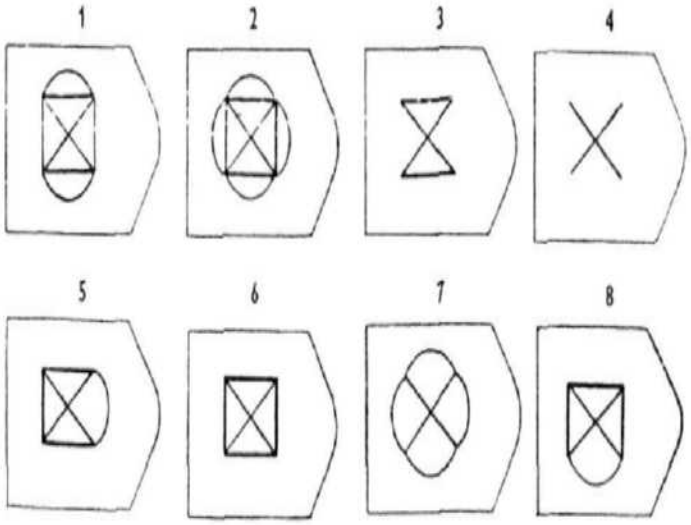
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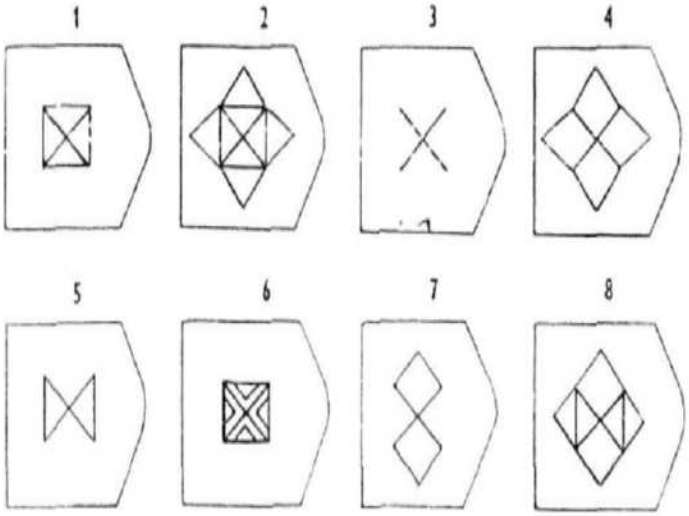
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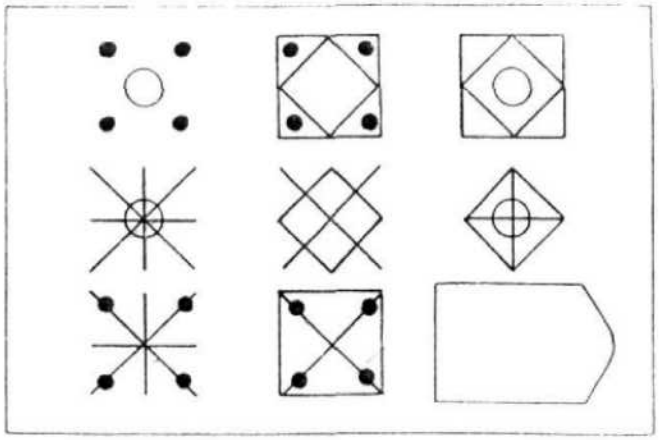
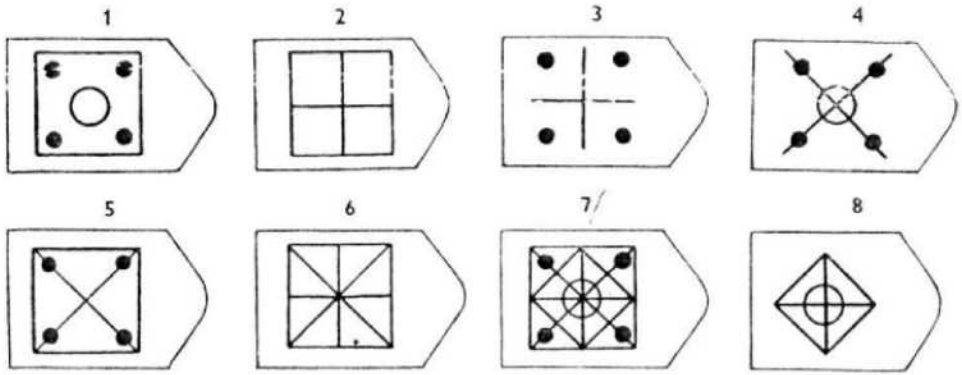
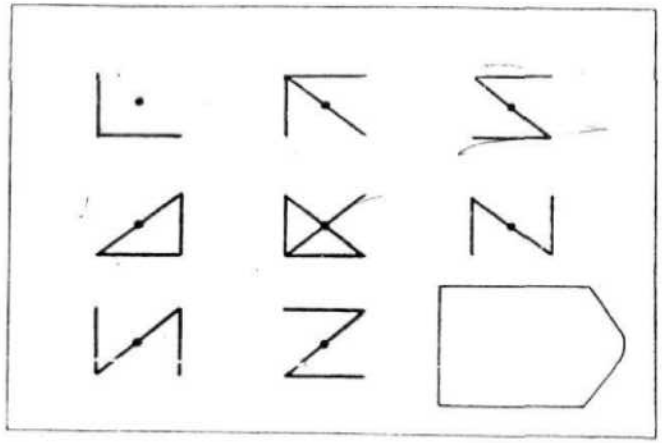
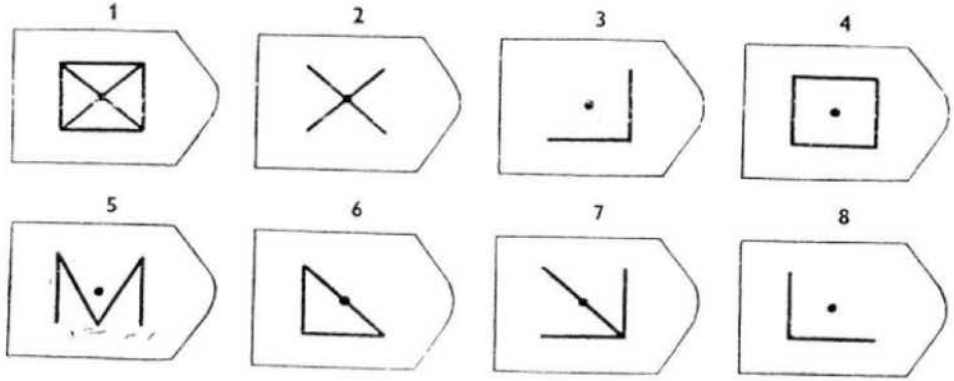
E10

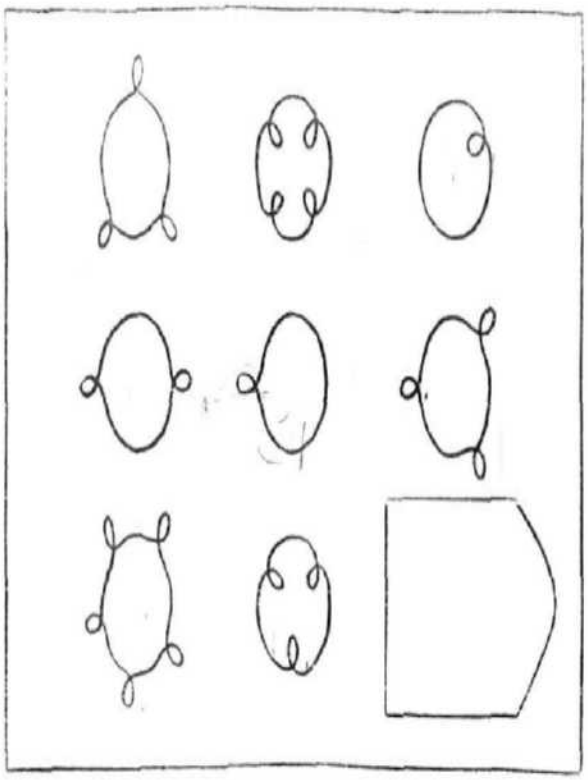


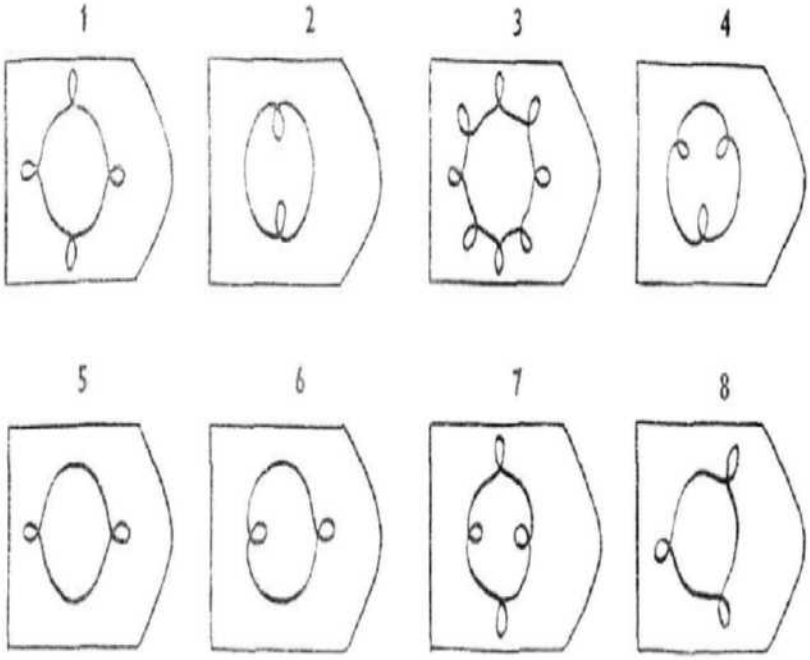


E11





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STANDARD
PROGRESSIVE MATRICES
SETS A, B, C, D, & E

Name _____ Ref. No. _____

Place _____ Date _____

Age _____ Birthday _____

Test begun _____ Test ended _____

A			B			C			D			E		
1			1			1			1			1		
2			2			2			2			2		
3			3			3			6			3		
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11			11			11			11			11		
12			12			12			12			12		

Time	Total	Grade

Notes

Tested by _____

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Consumable Form

of

TAS

(English Version)

Dr. J. C. Goyal *(New Delhi)*

T. M. No. 458715

Name—

Age— Sex—

Education—

Teaching Experience—

INSTRUCTIONS

On the reverse of this is given a list of statements about the teaching profession. Please read each of them carefully. Put a tick mark (√) in the cell provided on the right side of the statements with which you agree, otherwise cross (×) it. Let your own experience and first reaction determine your agreement or disagreement with statements.

Please start the work.

Estd. 1971 © 364926

NATIONAL PSYCHOLOGICAL CORPORATION

4/230, KACHERI GHAT, AGRA - 282 004

1. Teachers are generally happy in their profession. ☐
2. I pity those who aspire to become teachers. ☐
3. There is no other profession better than teaching. ☐
4. Teachers are not satisfied in their job. ☐
5. Teaching is an interesting job. ☐
6. Teaching profession is unattractive due to less promotional avenues in it. ☐
7. Teaching seems to be a popular profession. ☐
8. Teaching is regarded as a respectable profession. ☐
9. I regard teaching as the most miserable of all professions. ☐
10. Teaching profession has usually unfit persons in it. ☐
11. Teaching is a noble profession. ☐
12. Teaching now-a-days is like working in a business shop. ☐
13. Teaching profession advocates impractical ideas about class-room teaching. ☐
14. I shall not advise any one to join the teaching profession. ☐
15. Teaching develops personality of a person. ☐
16. It is a curse to teach. ☐
17. Teaching is meant for mediocres. ☐
18. Teaching is likely to make one imaginative. ☐
19. Persons from poor socio-economic back ground only like to teach. ☐
20. Teaching is one of the best ways of serving people. ☐
21. Teaching profession expects teachers to act ideally. ☐
22. Teaching is the best rewarding profession. ☐

PERSONAL DATA SHEET

1. Name of Teacher Trainee :
2. Age :
3. Gender : Female / Male
4. Mode of Education : Face-to-Face / Distance
5. Name of Teacher Training Institution:
6. Educational Qualifications :

Course	Passing Percentage
High School	
Intermediate	
B.A/B.Sc/B.Com	
M.A/M.Sc/M.Com	

7. Marital Status : Married / Unmarried
8. Nature of family : Nuclear / Joint
9. Number of dependent in the family :
10. Education qualification of Parents/Grand Parents:

Level of Education	Illiterate	Up to Class V	Up to Class X	Up to Class XII	Higher Education
Father					
Mother					
Grand Father					
Grand Mother					

11. Father's profession :
12. Monthly income of family : Rs. 5000 & below / Rs. 5001 - 15000 / Rs.15001 -30000 / Rs. 30001 – 50000/ above Rs. 50000
13. Membership of any club : Yes / No
14. Vehicles in the family : Car / two-wheeler / cycle